# ELICITING PROBLEMS AND EXECUTION OF NURSING INTERVENTIONS AMONG PATIENTS SUBJECTED TO CRANIOTOMY FOR TUMOUR EXCISION AT KMCH, COIMBATORE

**Reg. No. 301510451**

**A DISSERTATION SUBMITTED TO THE TAMILNADU**

**Dr. M. G. R.MEDICAL UNIVERSITY CHENNAI, IN**

**PARTIAL FULFILMENT OF REQUIREMENT**

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# CERTIFICATE

This is to certify that the project entitled **"Eliciting Problems and Execution of Nursing Interventions among Patients Subjected to Craniotomy for Tumour Excision at Kovai Medical Center and Hospital, Coimbatore"** is submitted to the faculty of nursing, **The Tamilnadu Dr. M. G. R. Medical University, Chennai** by **Reg. No. 301510451** in partial fulfillment of requirement for the degree of Master of Science in Nursing. It is the bonafide work done by her and the conclusions are her own. It is further certified that this dissertation or any part these of has not formed the basis for award of any degree, diploma or similar titles.

**Prof. DR. S. Madhavi, M.Sc (N), Ph.D.,**
Principal
KMCH College of Nursing
Coimbatore - 641014
Tamilnadu.

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**APPROVED BY DISSERTATION COMMITTEE ON AUGUEST 2017**


**1. RESEARCH GUIDE:** _____

**Prof. DR. S. Madhavi, M.Sc(N)., Ph.D.,**
Principal
KMCH College of Nursing,
Coimbatore – 641014

**2. CLINICAL GUIDE** : _____

**Prof .P. Kuzhanthaivel, M.Sc(N).,**
Department Of Medical and Surgical Nursing,
KMCH College of Nursing,
Coimbatore – 641014

**3. MEDICAL GUIDE:** _____

**Dr.J.K.B.C.Parthiban,M.Ch(Neuro).,**
**FNS (Fujit. Japan)., spine fellow (India).,**
Consultant Neuro, spine Surgeon
Kovai Medical Center & Hospital
Coimbatore – 641014


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# LISTOF ABBREVIATIONS

| SL. NO | ABBREVIATIONS | ACRONYMS |
|---|---|---|
| 1 | CNS | Central Nervous System |
| 2 | CBTRUS | Central Brain Tumour Registry Of United States |
| 3 | NICU | Neuro Intensive Care Unit |
| 4 | SICU | Surgical Intensive Care Unit |
| 5 | ICU | Intensive Care Unit |
| 6 | BP | Blood Pressure |
| 7 | HTN | Hypertension |
| 8 | RR | Respiratory Rate |
| 9 | SSI | Surgical Site Infection |
| 10 | EVD | External ventricular drainage |
| 11 | ICP | Cranial Pressure |
| 12 | OR | Odd Ratio |
| 13 | CI | Confidential Interval |
| 14 | PAPR | Post Anesthesia Recovery Room |
| 15 | RTF | Ryles Tube Feeding |
| 16 | POD | Post operative day |
| 17 | IVF | Intra Venous Fluid |
| 18 | KMCH | Kovai Medical Center And Hospital |
| 19 | WHO | World health organization |
| 20 | LOC | Loss of consciousness |
| 21 | ISO | International Standards Organization |

# CHAPTER - I

# INTRODUCTION

There is no machine more complex and extraordinary than the human body among the body systems, the nervous system is often viewed as an intimidating, complex and poorly understood system.

A brain tumor is a collection or mass of abnormal cells in brain. Skull encloses brain, is very rigid. Any growth inside the skull and restricted space can cause problems. Brain tumors can be cancerous or benign. When tumors begin to grow, it can cause increase pressure inside skull to elevate ICP. This can cause brain damage, and life-threatening. (Black, 2009)

The worldwide incidence rate of primary malignant brain and other CNS tumors was 3.4 per 100,000 in 2012. The incidence rates were higher in more developed countries 5.1 per 100,000 than in less developed countries 3.0 per 100,000. (CBTRUS, 2016)

Approximately 4000 patients in the Unites States are diagnosed with glioblastoma each year. The median age at diagnosis is 65 years. The main risk factors for glioblastoma extremely rare genetically inherited syndromes, including Li-Fraumeni syndrome and Turcot's syndrome, and exposure to ionizing radiation. (Grimm, 2011).

Cause of brain cancer is not clearly understood. The established risk factor is ionizing radiation, demonstrated in studies of receiving cranial irradiation for cancer therapy and tinea capitis, individuals exposed to atomic bombs and nuclear weapons testing. (McKay, 2014)

Critically located tumors may damage specific motor and sensory neural pathways traversing the brain. Tumors can invade, infiltrate the normal parenchymal tissue, disrupting normal function, that increased limited volume of the cranial vault, growth of intracranial tumors with accompanying edema may cause increased intracranial pressure. Tumors next to the third and fourth ventricles may impede the flow of cerebrospinal fluid, may leading to obstructive hydrocephalus. In addition,

tumors generate new blood vessels disrupting the normal blood-brain barrier and promoting edema. (Bruce, 2015)

The symptoms of brain tumor depend on tumor size, type, and location . Most cases symptoms will not be due to a brain tumour. Symptoms may be caused when a tumor presses on a nerve or harms a part of the brain. Symptom can include headache, blurred vision and nausea. (Brain tumour charity, 2014).

Diagnosis of a suspected brain tumor is dependent on appropriate brain imaging and histopathology. The imaging modality of choice is gadolinium-enhanced Magnetic Resonance Imaging. There is no specific pathgnomonic feature on imaging that differentiates between primary brain tumors and metastatic or non neoplastic disease.(perkins, 2016)

Treatment for brain cancer should be vary for each patient. Management based on the patient's age and general health status as well as the size, location, type, and grade of the tumor. In most cases prefer any combination of surgery, radiation, and chemotherapy is required. Most tumors require several different type of surgical procedures, and some can be treated with radiation alone. (Davis,2016)

A craniotomy is the surgical opening of the cranium to gain access to disease or injury affecting the brain, ventricles or intracranial blood vesels. Craniectomy is removal of part of the cranium to treat compound fractures, infection or decompression of fluid beneath the dura or in preparation for craniotomy. Cranioplasty is the application of artificial material to repair the skull to improve integrity and shape. (Gulanick, 2008).

Cognitive remediation is a collaborative treatment and it teaches compensatory strategies, such as using a memory notebook or daily planner, as well as using task analysis. The goal is to apply these strategies to everyday life after brain tumor surgery. It incorporates attention-enhancing exercises that require improving neurological functions. These attention exercises useful both visual and auditory skills. (Sacks, 2015)

Meticulous nursing management is very important .Nurse must take a part in care of patients underwent craniotomy by creating a nursing care plan. Assessment of patients in the days and first weeks after craniotomy should be frequent and

thorough. It focused on the potential to develop neurological deterioration from continued elevated ICP, clinically evident or subclinical seizure, effusion or hematoma, or hydrocephalus. Surgical site should be monitored for turgor and pressure at the site, as well as any early signs of wound infection. Accurately monitor and record all vital signs .Pain management must be done soon as to prevent disturbed and ineffective coping after the procedure. Care aimed at prevention of post operative complications are imperative for the patient's survival.

**NEED FOR THE STUDY**

The global incidence of craniotomy rising and it was done in 49.12% of patients. About 34.58% (n = 528) patients died in hospital, and 67.21% (n = 701) had unfavorable outcome at 6 month. (Kamal,2016) .

Primary brain cancers account for about 2% of all the cancers. In US it is the leading cause of cancer related deaths in patients who are younger than 35 years. In case of secondary tumors the incidence increases with age. Result of brain tumour 20% of total cancer deaths each year. (Sangamithra , 2016)

Age-adjusted cancer incidence in India rates ranged from 18.6million to 159.6million for men and 11.3million to 112.4million for women. Leukaemia and lymphoma were common malignancies in men, where as leukaemia and brain tumours were frequently found in women. ( Munshi,2014)

Incidence of craniotomy for brain tumour at KMCH for the year 2015-2016 was estimated as 139 cases .Out of 139 subjects majority76 were male and 63 were female. (ISO,2017)

Death from cancer is expected to increase 10.4% worldwide by the year 2020. The largest increases are predicted to occur among people living in developing countries in comparison with those in developed countries .Although cancer incidence rates are lower in developing countries than in North America and Europe. The rise in cancer related deaths will represent a significant burden to the overwhelmed health systems in developing countries. (WHO,2017) .

The overall prevalence rate of brain tumor was estimated to be 221.8 per 100 000 in 2010. The female prevalence rate 264.8 per 100 000 was more advanced than males 158.7 per 100000. The median prevalence rate for malignant tumors 42.5 per 100 000 was lower than nonmalignant tumors 166.5 per 100 000. (Kimberly,2010).

World wide prevalences of all primary brain tumors of 221.8 per 100 000, gliomas of 6.0 per 100 000, and meningiomas of 6.0 per 100 000 population. In 2015 prevalence reported an estimate of 130.8 per 100 000 for all primary brain tumor types. ( Robles,2015) .

Cranial surgery is either supratentorial is above the tentorium, involving the cerebellum or infratentorial is below the tentorium,involving the brain stem or cerebrum. Care decision are often based on surgical location.(gulanick,2008)

Current treatment modalities that intra-operative electro acupuncture, dexadetomidine, pregabalin and lidocaine may facilitate post craniotomy pain management. The use of volatile anesthetic agent in cancer surgery is associated with a worse survival compared with intravenous anesthetics, possibly by hindering immunologic defenses against cancer cells. (Popov,2016) .

The evolution of the craniotomy parallels the development of technology, the growth of our collective imagination, and our desire to provide maximum benefit with minimum risk and the smallest footprint. This issue bring to view three major historical aspects of neurological surgery such as craniotomy, cranioplasty, and the management of neurosurgical patients. (Carson ,2014) .

Application of Frameless stereotactic neuro navigation in brain tumour resection is now a ubiquitous tool in planning a surgical approach for brain tumor resection. Neuro navigational data can be reconstructed in three dimensions to simulate a surgical approach prior to surgery. While the most commonly used platforms for preoperative planning rely on a standard 2D computer screen interface, some have developed 3D virtual reality environments that can be used to better simulate an operative approach . (Orringer, 2012)

Use of awake craniotomy can result in a considerable deduction in resource utilization without compromising patient care by reducing intensive care time and total length of hospital stay. Awake craniotomy is a practical and most effective standard surgical approach to supra tentorial tumors with a low complication rate, and it allows the opportunity for brain mapping and avoids giving general anesthesia. (Giglio, 2010)

The brain tumour patients wanted support to deal with long-term care, social isolation, respite care, reduced life expectancy and stigma.In the long term, the present patients valued regular visits with their neurosurgeon to monitor tumour recurrence. Patients' concerns about tumour recurrence were valid as WHO grade I meningiomas had a 10-year recurrence rate of 7.5% and a 20-year rate of 9.3% . (Quinn,2016).

No surgery is without risks. Even though medical management is available to decrease the complication of craniotomy .Nurses have responsibility to help the patient to attain pre-morbid level. Many exciting nursing intervention are available, recent WHO guidelines are not applied based on evidence. This study attempt to identify the incidence, time duration of presenting neurological and non neurological problems to craniotomy patient and execute nursing intervention as per recent guidelines with an aim to contribute to the speedy recovery of patient. Result of this study may be pre lead to formulation of standardized comprehensive nursing strategy in future.

**STATEMENT OF PROBLEM**

Eliciting Problems and Execution of Nursing Interventions among Patients Subjected to Craniotomy for Tumour Excision at Kovai Medical Center and Hospital, Coimbatore.

## OBJECTIVES

The objectives of the study were to

- elicit the problems of patients following craniotomy.
- execute the nursing interventions on patients subjected to craniotomy for tumour excision.
- evaluate the effectiveness of nursing interventions executed on patient following craniotomy.
- find out the association between selected demographic variables with elicited problems.

## OPERATIONAL DEFINITION

### PROBLEM

The consequence of cranial surgery which leads to physical changes that disturb daily activities of living such as eating, combing and bathing etc., and physiological changes such as hypotension, tachycardia and electrolyte imbalance that may deteriorate the normal functions of the victim and ends in fatal outcome.

### NURSING INTERVENTIONS

Nursing action which is carried out to manage the elicited problems like independent, dependent` and interdepend.

### PATIENT

Adult who had undergone either supra and infra tentorial tumour excision.

### ASSUMPTION

- Patient subjected to craniotomy surgery are at risk of developing critical nursing care problems, which need prompt identification and initiation of nursing intervention
- The patients with brain tumour encounter adverse prognosis.

## CONCEPTUAL FRAMEWORK

It was developed on the basis of Ida Jean Orlando. She proposed her model in 1926, which was further clarified and refined in1961.

Orlando's nursing theory revolve around 5 major interrelated concepts.1.function of professional nursing, 2.presenting behavior of patient, 3.immediate or internal response of the nurse, 4.nursing process discipline, 5.improvement.

1. Nurses responsibility-Nurses are responsible to meet the patients needs either directly by her own activity or indirectly getting help of others.
2. Need is situationally defined as requirement of the patient which if supplied relief or diminishes his /her immediate distressor and improves immediate sense of adequacy or well being.
3. Presenting behavior of the patient is any observable, verbal or non verbal behavior of the patient.
4. Immediate action includes both nurses and patients individual perception, thoughts and feelings.
5. Nursing process discipline includes nurse communicating to patient his /her own immediate reaction clearly identifying that the item expressed belongs to the nurse and then asking for validation or correction.
6. Improvement means to grow better to turn, to profit and to use to advantage.

The attributes adopted for this study are

1. Behavior of patient( subjective and objective assessment)
2. Reaction of the nurse(nursing diagnosis ,planning for action)
3. Nursing action( implementing action for patient 's benefit)
4. Orlando process that nurse's should help, relieve physical and mental discomfort and should not act to the patient distress. This assumption is evident in the concept of improvement in patient's behavior as the indent ended outcome of the nursing action. This is done in the last phase that is evaluation which helps in reassessment.

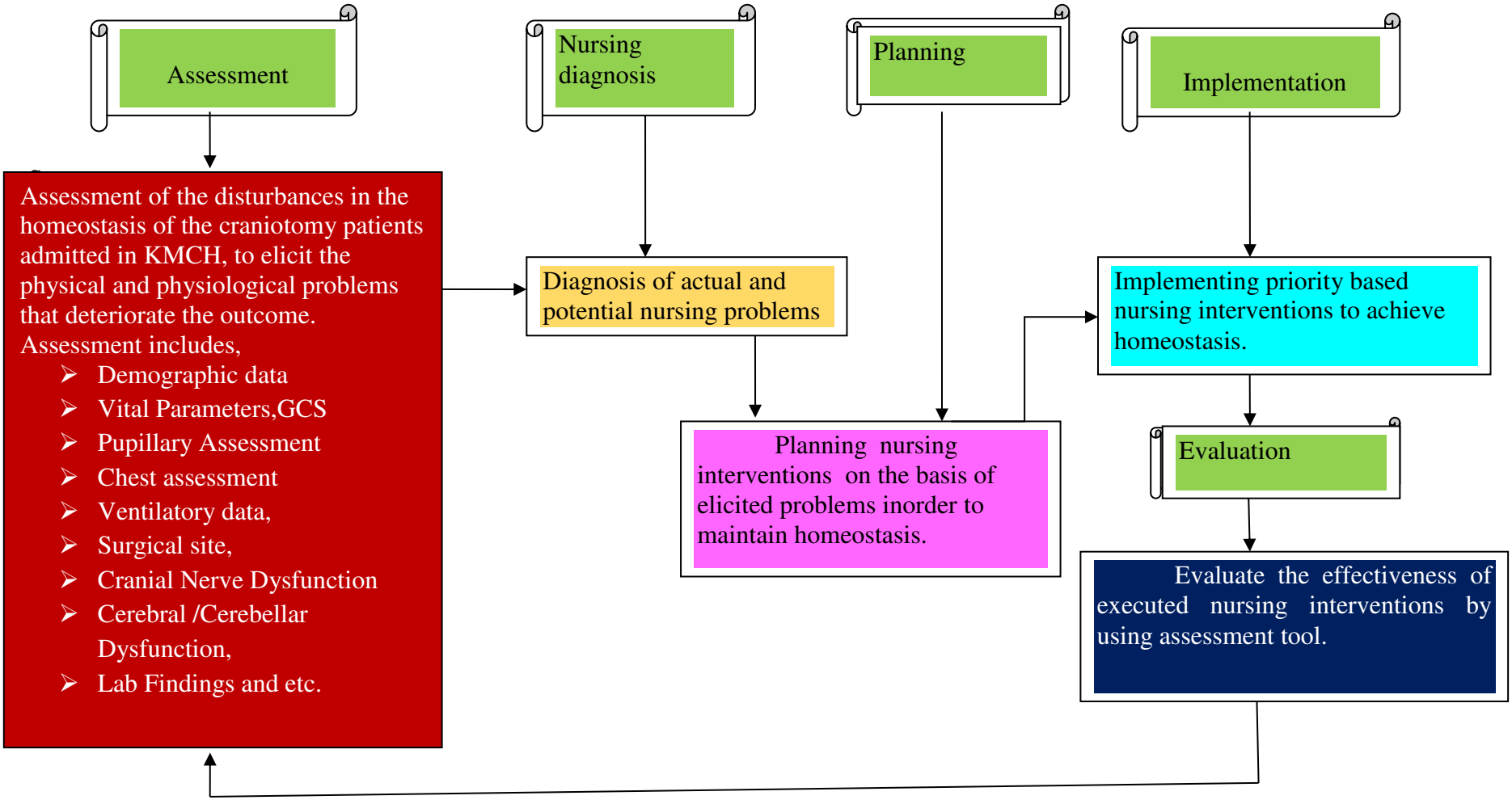


**Figure 1: Modified Ida Jean Orlando's Nursing Process Theory (1961)**

# CHAPTER II

## REVIEW OF LITERATURE

This chapter deals with the information collected in relation to the present study through published and unpublished materials for foundation to carry out the research work. Highly extensive review was made to strengthen the present study ,and to lay down the foundation, which helps to reveal the prevailing situation of the similar studies in different areas.

The related literature for this study categorized under the following sections.

Section A : Literature related to incidence and causes of brain tumors.

Section B : Literature related to immediate assessment and Nursing care of patients underwent craniotomy for tumour excision.

Section C : Literature related to problems and causes for death of patients following craniotomy

**Section A: Literature Related to Incidence and Causes of Brain Tumor**

CBTRUS (2017) stated that meningioma represents 36.6% of all primary brain tumors, will be estimated 27,110 new cases in 2017.Gliomas, the gluey or supportive tissue of the brain, represent 24.7% and 74.6% of all malignant tumors. Glioblastoma represent 14.9% of all primary brain tumors, and 55.4% of all gliomas. Glioblastoma has the highest number of cases of all malignant tumors, with an estimated 12,390 new cases. Resulit of Astrocytomas, and glioblastoma, entitled approximately 75% of all gliomas. Nerve sheath tumors represent 8.2% Pituitary tumors noticed about 16% of all primary brain tumors are not often become malignant. Regarding Lymphomas and Oligodendrogliomas noticed 2% and Medulloblastoma/ primitive tumors represent 1% of all primary brain tumors.

Sikdho .,et at .(2017) founded that brain and CNS tumors occurred in females more often than in males (female:male, 1.70:1). The most common tumor was meningioma (37.3%). Pituitary tumors (18.0%), gliomas (12.7%), and nerve sheath tumors (12.3%) .Incidence of Glioblastomas accounted for 41.8% of all gliomas.

Munshi., et al. (2016) estimated that tumors of the central nervous system constitute 1–2% of all malignancies. CNS malignancies arguably have the most varied manifestations among all cancer sites. There are several anatomical sub regions in the craniospinal axis, and each of these has a predilection for a particular tumor subtype. Among CNS neoplasms, gliomas are the most common tumors for craniotomy.

Strong (2015) reported that incidence of primary brain tumors is relatively low compared to other cancer types, primary brain tumors give rise to a disproportionate amount of morbidity and mortality, often causing debilitating impairment to patients movement and speech .Although primary CNS tumors comprise only 1.4% of all cancers, they are among the most aggressive tumors and result in a combined mortality rate of about 60% .The five year survival rate for primary malignant brain and central nervous system tumors is the sixth lowest among all types of cancers after pancreatic, liver , intra hepatic bile duct, lung, stomach, and esophageal cancer.

Aliasgar., et al. (2012) Conducted a study on Perioperative outcomes following surgery for brain tumors. Objective assessment and risk factor evaluation results that median age was 38 years. 72% had tumors larger than 4 cm. Neurological morbidity and regional and systemic complications occurred in 16.8, 17.3, and 10.7%, respectively. Overall, major morbidity occurred in 18% and perioperative mortality rate was 3.6%.

Jenny (2012) estimated annual incidence of intracranial tumours was 14.7 per 100 000. The annual incidence of primary CNS tumours was 10.8 per 100 000, and 3.5 per 100 000 for meningiomas. A total of 70 high-grade gliomas (incidence rate of 1/100 000) and 171 pituitary tumours were diagnosed, both of which were more prevalent in the 45–64-year age group. Meningiomas and pituitary tumours were more common in females.

Peter., et al. (2010) examined temporal trends in brain cancer incidence rates in the United States. A total of 38 788 brain cancers were diagnosed among whites over the 30-year period, of which more than 95% were gliomas. The current change in 20–29-year-old women was driven by a peak incidence of frontal lobe cancers. No studies were apparent increases for temporal, parietal lobe or cerebellum cancers, which occupies the parts of the brain that would be more highly exposed to radiofrequency radiation from cellular phones. Frontal lobe

cancer rates also increased among 20–29 year-old males, but the increase began earlier than among females and before cell phone use was highly prevalent( $\alpha = 0.05$ )

**Section B : Literature Related to Immediate Assessment and Nursing Care of Patients Underwent Craniotomy for Tumour Excision.**

Chen., et al. (2014) done a prospective cohort study with adult patients were enrolled after elective craniotomy for brain tumor. The sedation-agitation scale was evaluated during the first 12 hours after surgery. Agitation developed in 35 of 123 patients (29%) of the agitated patients, 28 (80%) were graded as very and dangerously agitated. Emergence agitation was associated with self- extubation (8.6% vs 0%, P=50.005). Sedatives were administered more in agitated patients than non-agitated patients (85.7% vs 6.8%, P=0.001). Emergence agitation was a frequent complication in patients after elective craniotomy for brain tumors.

Wu as., et al. (2014) done a Prospective Randomized Trial of Perioperative Seizure Prophylaxis in Patients with Intra parenchymal Brain Tumors**.** Over all 123 patients (77 metastases and 46 gliomas) were randomized, with 62 receiving 7-day phenytoin (prophylaxis group) and 61 receiving no prophylaxis . The incidence of advance seizures estimated (< 30 days after surgery) was 8% in the observation group compared with 10% in the prophylaxis group ($p = 1.0$). The incidence of clinically remarkable early seizures was 3% in the observation group and 2% in the prophylaxis group ($p = 0.62$). The prophylaxis group experienced significantly more adverse events (18% vs 0%, $p < 0.01$).

Kotak., et al. (2009) conducted a survey on post-craniotomy analgesia in British neurosurgical centers to ascertain whether there was a general consensus regarding post craniotomy pain management. All 31 adult neurosurgical units were surveyed. Twenty three percent (7 units) had a standardized analgesic regime/protocol and 65% routinely assessed pain post-operatively (20 units). Seventy percent of units used codeine phosphate or dihydrocodeine (22 units) as the first line opioid the other 30% using morphine (9 units). Forty two percent (13 units) used tramadol; patient controlled analgesia was used in 3 units. Regular paracetamol was prescribed in all but five (16%) units. Fifty two percent of units (16) used NSAIDS of those that used NSAIDS 19% (3/16) prescribed them regularly. One unit used clonidine infusions.

Kincaid (2007) did a prospective study to evaluate the incidence, severity, and treatment of post operative pain in patients who underwent major intracranial surgery. Sixty-nine percent of the patients reported experiencing moderate to severe pain (2- 4 on a 0-10 scale) during the 1st postoperative day. Pain scores greater than or equal to 4 persisted in 48% on the 2nd postoperative day. Approximately 80% of patients were treated with acetaminophen on the 1st postoperative day, opioids (fentanyl) were administered to 58%. Compared with patients who underwent supratentorial procedures, those who underwent infratentorial procedures reported more severe pain at rest (mean score 4.9 ± 2.2 compared with 3.8 ± 2.6; p = 0.015) and with movement (mean score 6.3 ± 2.6 compared with 4.5 ± 2.7; p <0.001) on the first postoperative day. On both the 1st and 2nd postoperative days, patients who underwent infratentorial procedures received greater quantities of opioid (p ~ 0.019) and nonopioid (p ~ 0.013) analgesics than those who underwent supratentorial procedures. Patients' dissatisfaction with analgesic therapy was significantly associated with elevated pain levels on the first two postoperative days (p <0.001).

**Section C: Literature Related to Problems and Causes for Death of Patients Underwent Craniotomy for Tumor Excision**

Cabantog (2015) examined the Complications in adult patients undergoing first craniotomy for intra-axial brain tumour. There were 25 infratentorial tumours and 182 supratentorial tumours. The patients experienced complications was 52 for an overall complication rate of 25.1%, the rate was higher for infratentorial tumours (44.0%) than supratentorial tumours (22.8%) regardless of histology (p = 0.012). There were 5 deaths for a mortality rate of 2.4%. Forty-seven patients incurred operative morbidity (22.7%),7 out of the 47 had multiple complications. Sixteen patients sustained transient worsening due to edema (7.7%) and 6 patients sustained permanent neurological deficit (2.9%). Medical complications were suffered by 17 patients (8.2%). Major complications which significantly altered the quality and quantity of Survival were suffered by 9 patients (4.3%).

Liang., et at .(2016) found that High rates of postoperative epilepsy were observed in supratentorial glioblastoma resection patients. Among Of 184 patients, 43 (23.37%) were diagnosed with epilepsy before their initial resection. The total incidence of epilepsy (both pre- and postoperative) was 68.48%. The prevalence of active epilepsy reached over 80% in patients with epilepsy and survival of greater than 13 months postoperatively. with 15

(39.5%) of the subjects with temporal lobe lesions and 9 (34.6%) of those with parietal lobe lesions experiencing post-operative onset epilepsy. However, the incidence of postoperative epilepsy was highest in the patients with frontal lobe lesions, with 38 of 61 patients (62.3%) developing seizures.

Abraham., et al. (2017) identified that intracranial hematoma usually occurs within 6 hours of craniotomy or stereotactic biopsy. A post-operative computed tomography scan at 4 hours and conversion to inpatient status in the event of significant haematoma or oedema, even if the patient is clinically asymptomatic. Usually, patients are discharged 6 hrs after surgery once the discharge criteria are met. Post-operative brain oedema, which usually peaks around the $2^{nd}$ or $3^{rd}$ post-operative day, has the incidence of 10%. In a recent 5-year retrospective observational study of same-day discharge for supratentorial tumours,

Lonjaret (2016) conducted a prospective, observational and analytic study enrolled 167 patients were studied. Thirty one percent of the patients presented at least one complication (25% with postoperative nausea and vomiting (16% with neurologic complications). The occurrence of neurological complications was significantly associated with the absence of preoperative motor deficit and the presence of higher intraoperative bleeding. Seven patients (4%) were readmitted to the ICU after discharge; 43% (n=3) of them had a posterior fossa surgery.

John (2016) identified that Complications of ventricular entry vs Non ventricular entry during craniotomy for brain tumor resection had significantly higher rates of any complication (46% vs 21%). Complications included development of subdural hygroma, subdural hematoma, intraventricular hemorrhage, subgaleal collection, wound infection, urinary tract infection/deep venous thrombosis, hydrocephalus, and ventriculoperitoneal (VP) shunt placement. Specifically, these patients had significantly higher rates of EVD placement (23% vs 1%, $p < 0.001$), hydrocephalus (6% vs 0%, $p = 0.03$), IVH (14% vs 0%, $p < 0.001$), infection (15% vs 5%, $p = 0.04$), and subgaleal collection (20% vs 4%, $p < 0.001$). It was also observed that VP shunt placement was only seen in cases of ventricular entry (11% vs 0%, $p = 0.001$) with 3 of 4 of these patients having a large ventricular.

Chen.,et al.(2014) founded that the risk of meningitis was increased by the presence of diabetes mellitus (odds ratio [OR], 6.27; $P=0.009$), the use of external ventricular drainage (OR, 4.30; $P=0.003$) and the use of lumbar drainage (OR, 17.23; $P<0.001$). The isolated

microorganisms included acinetobacter baumannii, enterococcus sp, streptococcus intermedius and klebsiella pneumonia.

Meling.,et al. (2013) stated that infections after neurosurgical procedures often present as meningitis, subdural empyema, or cerebral abscess. Although meningitis can often be treated with intravenous antibiotics, cases that involve a bone flap infection, subdural empyema, or cerebral abscess usually require a repeated operation. In a recent large series, 1.5 % of the patients were re-operated for postoperative infection. Among of these infections, 59.0 % were extradural. Independent risk factors were male sex and meningioma histopathology. The vast majority of reoperations occurred within 3 months of tumor surgery. The consequences of postoperative infections were generally minor, as 85 % had a good outcome with no or only a mild disability, but within the group of patients re-operated for infection, the mortality rate was 5 %.

Elmowla1 (2015) concluded that Venous thromboembolism is the common cause of perioperative morbidity and mortality in malignant gliomas, with the incidence of 20 to 30% . Old age (>60 years), large sized tumor and paralytic leg can be regarded as risk factors . Patients with malignant gliomas are often suppose to have increased risk of intracranial hemorrhage after anticoagulation therapy because of the increased vascularity of the tutors.

Hanak.,et al.(2012) revealed that diabetics ($p = 0.00047$), patients who required intra-operative blood product administration ($p = 0.032$), older patients ($p < 0.0001$), patients with higher intra-operative blood losses ($p = 0.041$), and patients who underwent longer surgical procedures ($p = 0.021$) were more likely to require ICU-level interventions or experience significant post-operative complications.

Chiang(2012) identified that complications of craniotomy are SSIs 88% were deep incisional or organ space infections, 70% were identified after patients were discharged from their initial hospitalizations, 32% were caused by Staphylococcus aureus alone or in combination with other organisms, and 27% were caused by Gram-negative organisms alone or in combination with other organisms. Significant independent risk factors for SSIs were: previous chemotherapy (odds ratio [OR], 10.0; 95% confidence interval [CI] 1.1, 92.1), preoperative length of stay ≥ 1 day (OR, 2.1; 95% CI 1.3, 3.5), preoperative serum

glucose ≥ 100 mg/dl (OR, 1.7; 95% CI, 1.0, 3.0), Gliadel wafer use (OR, 8.6; 95% CI 3.2, 23.1), and postoperative cerebrospinal fluid leak (OR, 4.0; 95% CI, 1.6, 10.3).

Benedettis [2010] estimated that postoperative pain was more common than generally assumed, quoting a figure of 60%. In two-thirds of these patients, the intensity of pain was moderate to severe. Pain most frequently occurred within the first 48 h after surgery, but up to 32% of patients still endured pain after this initial period. While craniotomy pain may be less severe than pain after other operations, there is a growing consensus that it remains under-treated in the acute recovery phase for at least a minority of patients.

Davie (2009) did a study on aphasia in patients after brain tumour resection and found that aphasia was usually mild (63% of patients) and that anomic aphasia was the most common subtype (48% of patients) during the acute recovery period after brain tumour resection, regardless of lesion location or tumour grade.

Hanak., et at.(2012) stated that Postoperative hematomas at the operative site occur in approximately 5% of patients. A transient neurological deficit will occur in approximately 10% of patients post operatively. Morbidity is less with stereotactic operations. There is recovery of the neurological deficit in approximately 50% of cases. There is also a risk of seizures as a result of operation in those who have no prior history of seizures and sometimes a flurry of seizures in the postoperative period.

# CHAPTER - III

# METHODOLOGY

Methodology gives the blue print of the study. This chapter deals with research design, setting of the study, population, sample size, sampling technique, criteria for sample selection, development and description of tools, content validity, pilot study, Procedure for data collection and statistical analysis.

## RESEARCH DESIGN

The research design adopted for this study was case study method. It involves an intensive exploration of problems encounted by patients subjected to craniotomy for tumour excision and related nursing interventions.

## SETTING OF THE STUDY

This study was conducted in Neuro ICU, SICU,MICU and Neuro ward where the brain tumour excision patients were admitted, in Kovai Medical Center and Hospital, Coimbatore. It is a multi speciality hospital with NABH accreditation, consisting of 800 beds with modern facilities and excellence in health care delivery system. The Neuro-ICU team assists the patients with neurological disorders and is expected to manage and optimize care for patients with a broad range of neurological issues. Approximately 7-8 subjects are undergone for tumour excision per week.

## POPULATION OF THE STUDY

The adult patient who underwent brain tumour excision surgeries at KMCH.

## SAMPLE SIZE

Sample size was 20.

## SAMPLING TECHNIQUE

The technique adopted for this study was Non probability purposive sampling.

## CRITERIA FOR SAMPLE SELECTION

### Inclusion Criteria

- The Patients who underwent infratentorial and supratentorial craniotomy for tumour excision.
- The Patients aged above 20 of both male and female

### Exclusion Criteria

- The Patients who had preoperative endotracheal intubation or tracheostomy**.**
- The Patients had major traumatic injuries elsewhere.
- Transphenoidal approaches

## DEVELOPMENT AND DESCRIPTION OF THE TOOL

The investigator prepared the tool after going through the related literature and guidance of experts in the field of Nursing and Critical Care Medicine.

The tool for data collection was consist of three sections namely,

Section A: Demographic data

Section B: Assessment tool

Section C: Investigator's Nursing note

### Section A: Demographic data

It includes sample number, age, sex, BMI ,GCS score on admission ,marital status, co-morbidity, personal history of negative habits ,date and time of admission, date and time of surgery and type of craniotomy.

### Section B: Assessment Tool

It consist of vital parameters ,signs of increased ICP such as GCS score, pupillary assessment, presence of symptoms, ABG analysis, chest assessment, ventilatory data, respiratory effort ,pain assessment, , surgical site assessment ,hypo/hyperthermia assessment,

cranial nerve dysfunction ,fluid and electrolyte imbalance, meningitis, sensory and motor loses, cerebral /cerebellar dysfunction, laboratory findings and others.

**Section C: Investigators Nursing Note**

The investigator maintained a note on nursing measures and evaluation.

**CONTENT VALIDITY**

The investigator formulated the tool based on the objectives after thorough literature review. The tool was submitted to the experts in the field of Nursing and Medicine to establish the content validity. Based on experts suggestions, the investigator finalized the tool for the original study.

**RELIABILITY**

After the pilot study reliability of tool was assessed by using split-half of method was used to find out the reliability of assessment tool. The reliability of Assessment tool r=0.762, which is a highly reliable value and its good tool to elicit the post operative problems after brain tumour excision.

**PILOT STUDY**

The pilot study was conducted in Neuro ICU, SICU, MICU and Neuro ward of KMCH, Coimbatore, for a period of two weeks, to ascertain the feasibility of the study. Formal permission was obtained before study. Pilot study has been conducted with three samples in brain tumour excision.

**PROCEDURE FOR DATA COLLECTION:**

Prior to data collection, necessary permission was obtained from concerned authorities and formal information was given to the incharges of the neuro surgical and medical intensive care unit and ward. The main study was conducted after ethical clearance from the ethical committee.

Data was collected from Neuro ICU, SICU , MICU and Neuro ward of Kovai Medical Center and Hospital, Coimbatore. Data was collected using Non probability purposive technique. The samples were selected as per inclusion criteria and provided nursing care

continuously for initial six hours after craniotomy surgery. Next six hours the investigator followed the sample for every two hours and every four hours for remaining 36 hours and daily once until discharge. The investigator eliciting the problems of the patients after craniotomy and executed nursing interventions.

The care given by other nurses in the absence of the investigator were also included. The information from the nurses and respective consultants along with patient's chart and nurses record were also considered .All the details of the patients were recorded in investigator's note.

**STATISTICAL ANALYSIS**

The obtained data was analyzed by using both descriptive and inferential statistics. In the description statistics mean, standard deviation and percentage were used in this study. In the inferential statistics one sample 't' test used to find out the association between selected demographic variable with elicited problems.

# CHAPTER - IV
# DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected to elicit problems and nursing interventions executed on patients underwent craniotomy .The collected data were carefully organized, analyzed using SPSS package as follows ,

Section A: Description of patients based on demographic data
Section B: Description of subjects according to physiological variables
Section C: Description of subjects according to pain score following craniotomy
Section D: Description of surgery related details of subjects
Section E: Description of subjects according to ventilatory assistance and respiratory parameters
Section F: Description of subject length of stay in hospital following craniotomy

Section G: Description of elicited problems of the samples
Section H: Description of problems of the subjects with time duration
Section I : Description of elicited problems, executed nursing interventions and its effectiveness for the respective samples
Section J : Description of elicited problems according to demographic and clinical characteristic of samples.

**SECTION - A: Description of Patients Based on Demographic Data**

Table 1: distribution of subjects according to demographic data

| S. No | Demographic Data | | Frequency(n=20) | Percentage (%) |
|---|---|---|---|---|
| 1 | Age | 20-40 | 11 | 55 |
| | | 41-60 | 8 | 40 |
| | | 61-80 | 1 | 5 |
| 2 | Sex | Male | 13 | 65 |
| | | Female | 7 | 35 |
| 3 | BMI | 18.5-25 | 10 | 50 |
| | | 25-30 | 10 | 50 |
| 4 | Marital Status | Single | 5 | 25 |
| | | Married | 15 | 75 |
| 5 | GCS Score on Admission | 13-15(Mild) | 17 | 85 |
| | | 9-12(Moderate) | 2 | 10 |
| | | 3-8(Severe) | 1 | 5 |
| 6 | Co-Morbidity | Diabetic Mellitus | 12 | 60 |
| | | Hypertension | 6 | 30 |
| | | Ischemic Heart Disease | 2 | 10 |
| 7 | Personal History of Negative Habits | Smoking | 9 | 45 |
| | | Alcoholism | 5 | 25 |
| | | Tobacco Chewing | 1 | 5 |
| 8 | Type of Craniotomy | Frontal | 6 | 30 |
| | | Parietal | 7 | 35 |
| | | Occipital | 1 | 5 |
| | | Fronto temporo and parietal | 6 | 30 |

Table 1 depicts the basic characteristics of subjects based on demographic variables such as age ,sex, BMI, marital status, GCS score on admission, co-morbidity, personal history of negative habits and type of craniotomy

With respect to age, equal proportion of all age group (≥20yrs) of subjects were enrolled in this study. Out of this 20 subjects, large proportion were men 65%(n=13) and only small proportion 35%(n=7) were women.

Based on BMI 50%(10) of them were had healthy weight, other 50%of subjects were belongs under 18.5-25. Majority of subjects 75% (n=15) got married, least of them 25%(n=5) were single, GCS score on admission 85%(n=17) were scored between 13-15,10%(n=2) were scored between 9-12,5%(n=1)of them scored between 3-8.

In this 60%(n=12) of subjects had DM, 30%(n=6) had hypertension and the remaining 10%(n=2) had ischemic heart diseases.

On the basis of personal habits 25%(n=5) were alcoholic, 45%(n=9)were smokers an5%(n=1)were tobacco chewers .Based on type of craniotomy 6(30%) were underwent frontal,7(35%)were parietal,1(5%)were occipital and 6(30%) were frontal temporal & parietal surgery.

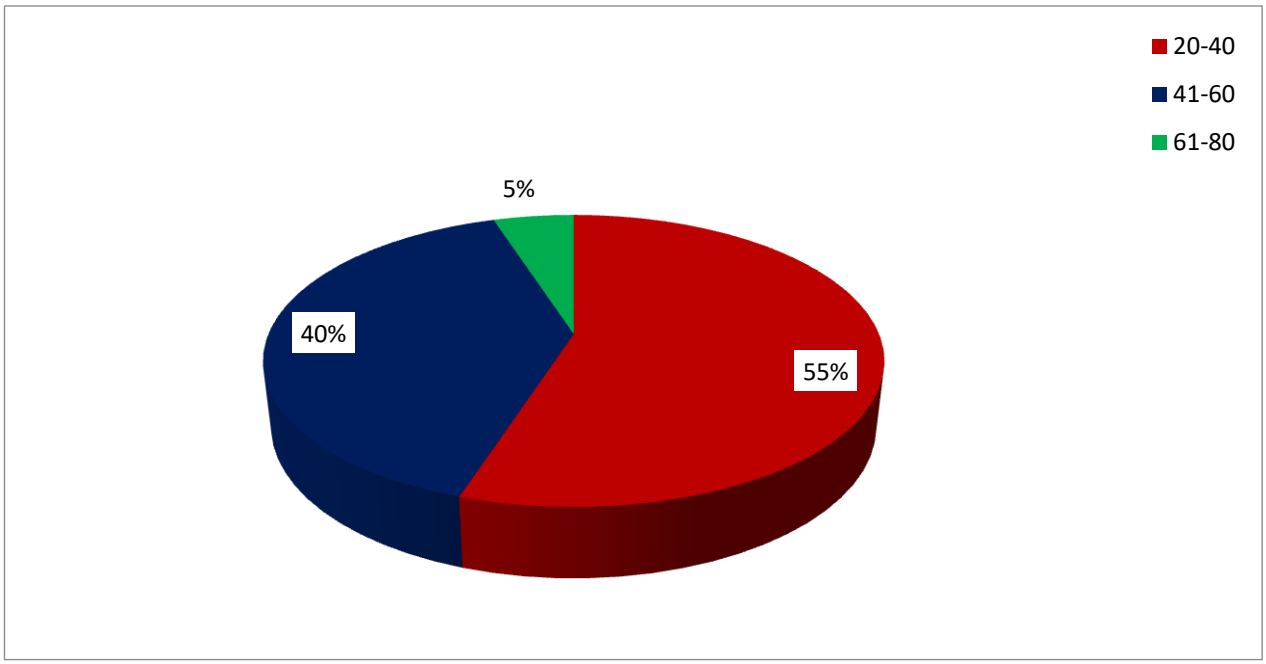


**Figure 2: Distribution of Samples According to their Age**

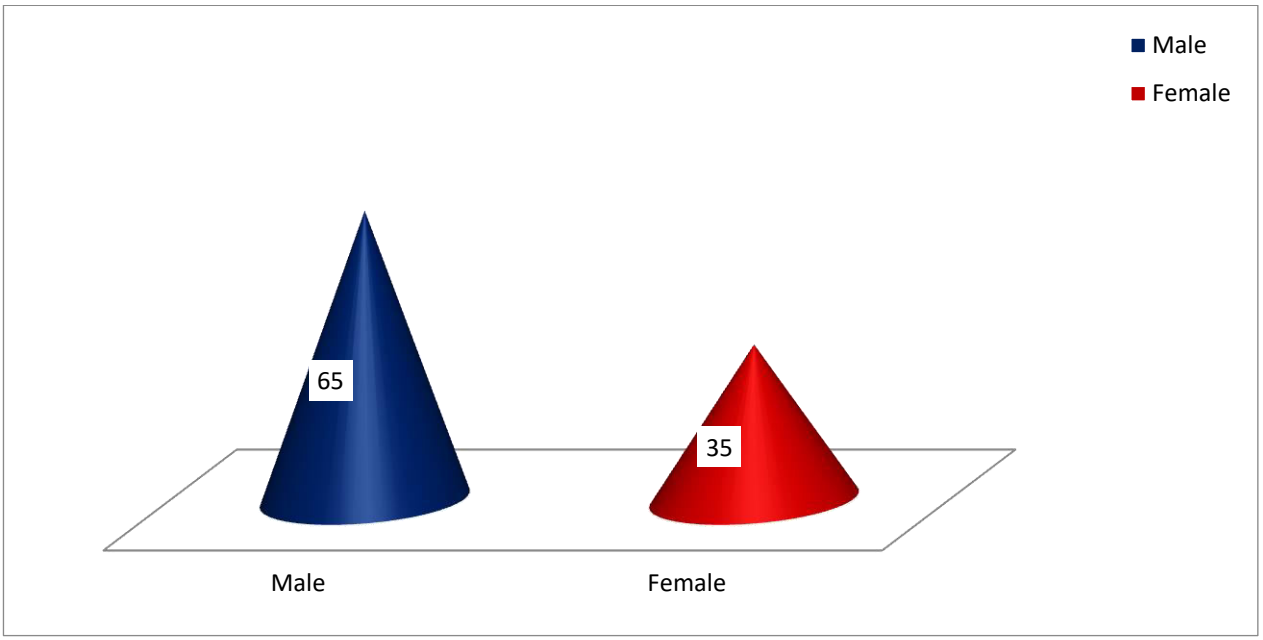


**Figure 3: Distribution of Samples According to their Sex**

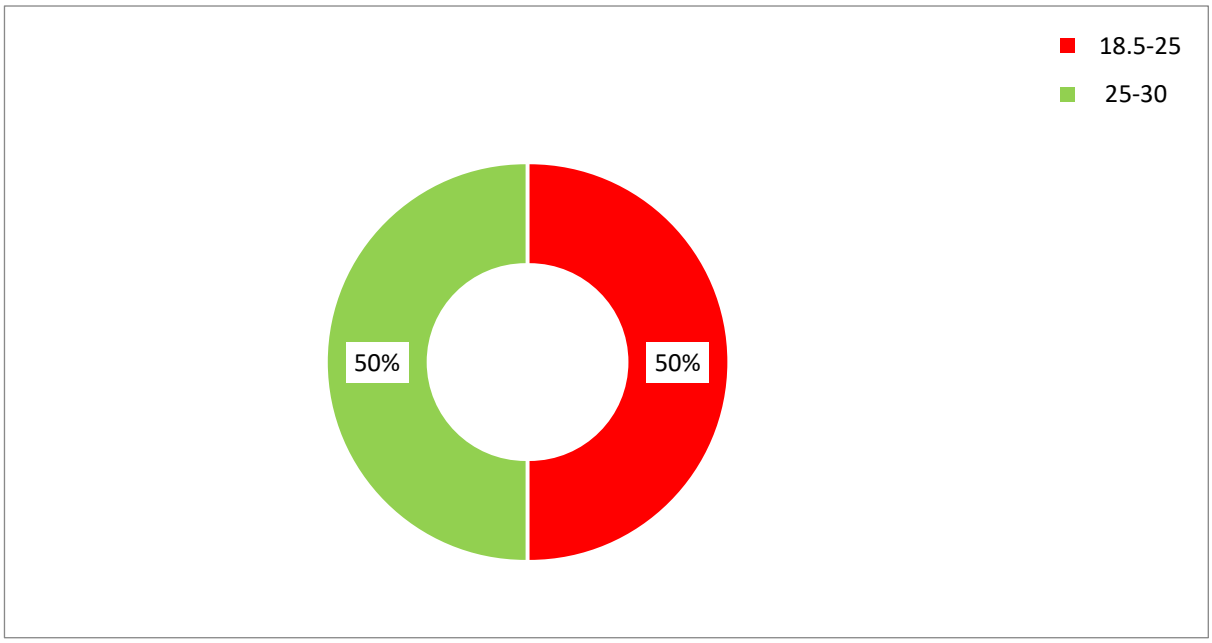


**Figure 4: Distribution of Samples According to their BMI**

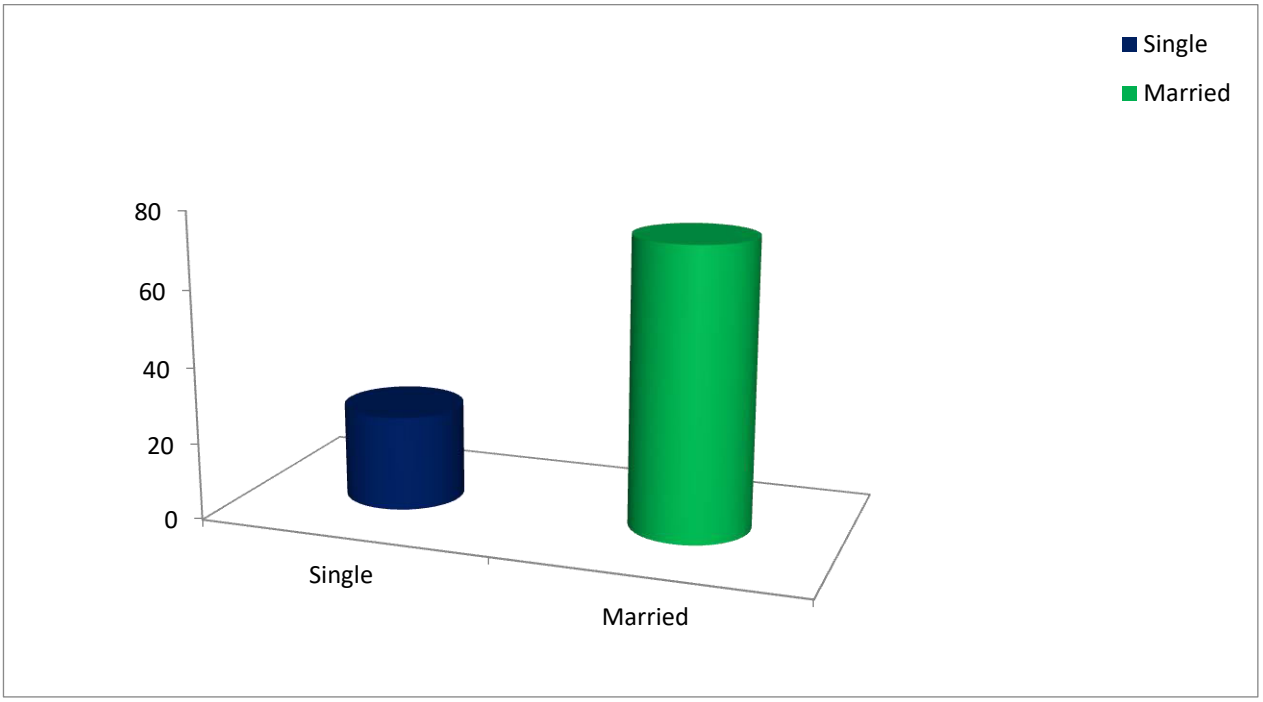


**Figure 5: Distribution of Samples According to their Marital Status**

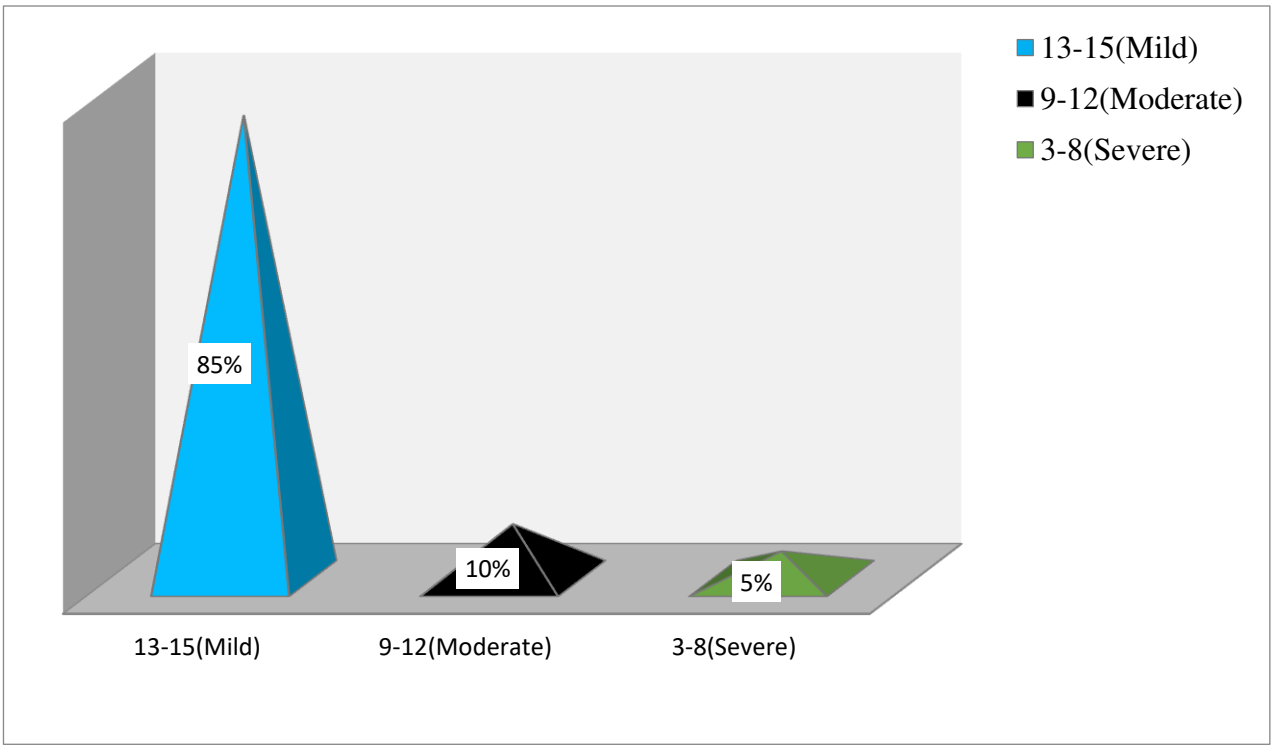


**Figure 6: Distribution of Samples According to their GCS Score on Admission**

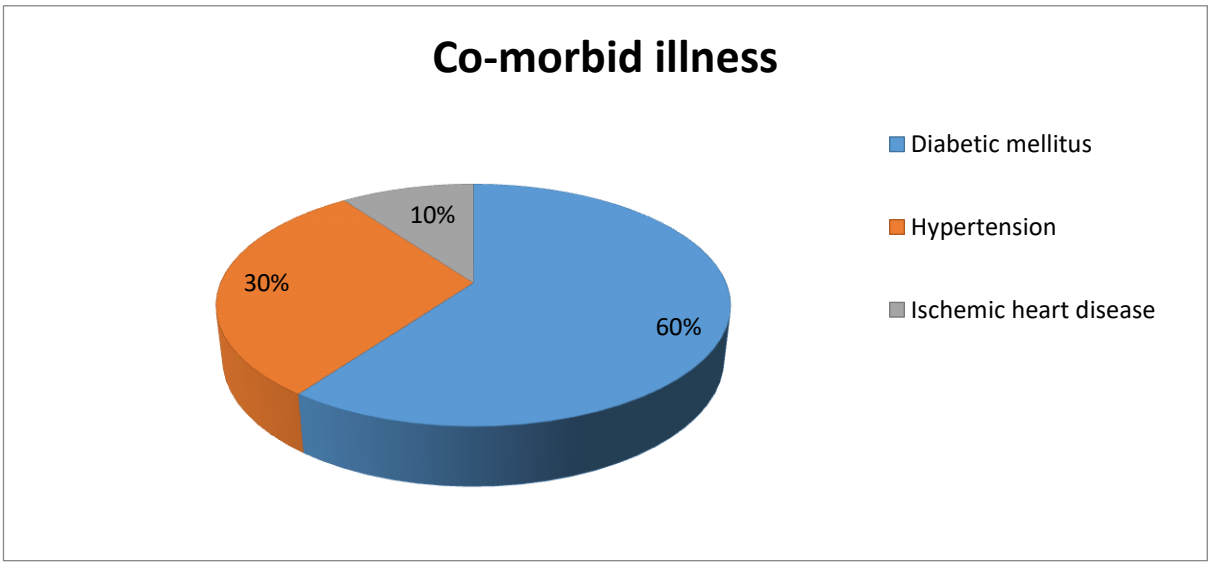


**Figure 7: Distribution of Samples According to Co-morbidity**

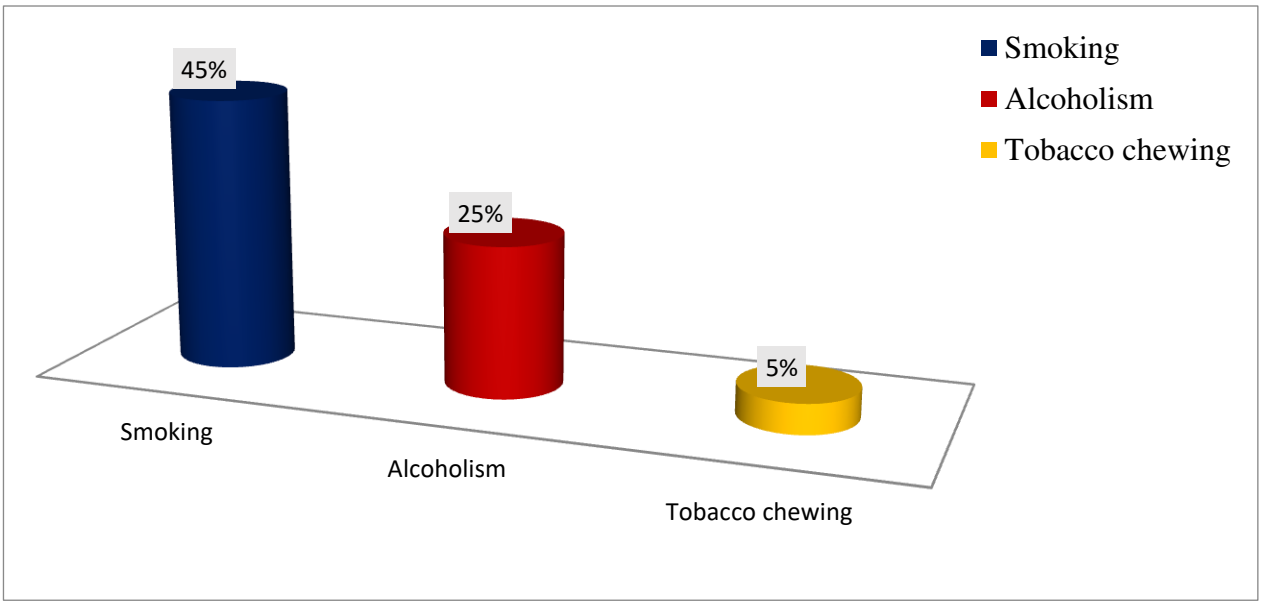


**Figure 8: Distribution of Samples According to Personal History of Negative Habit**

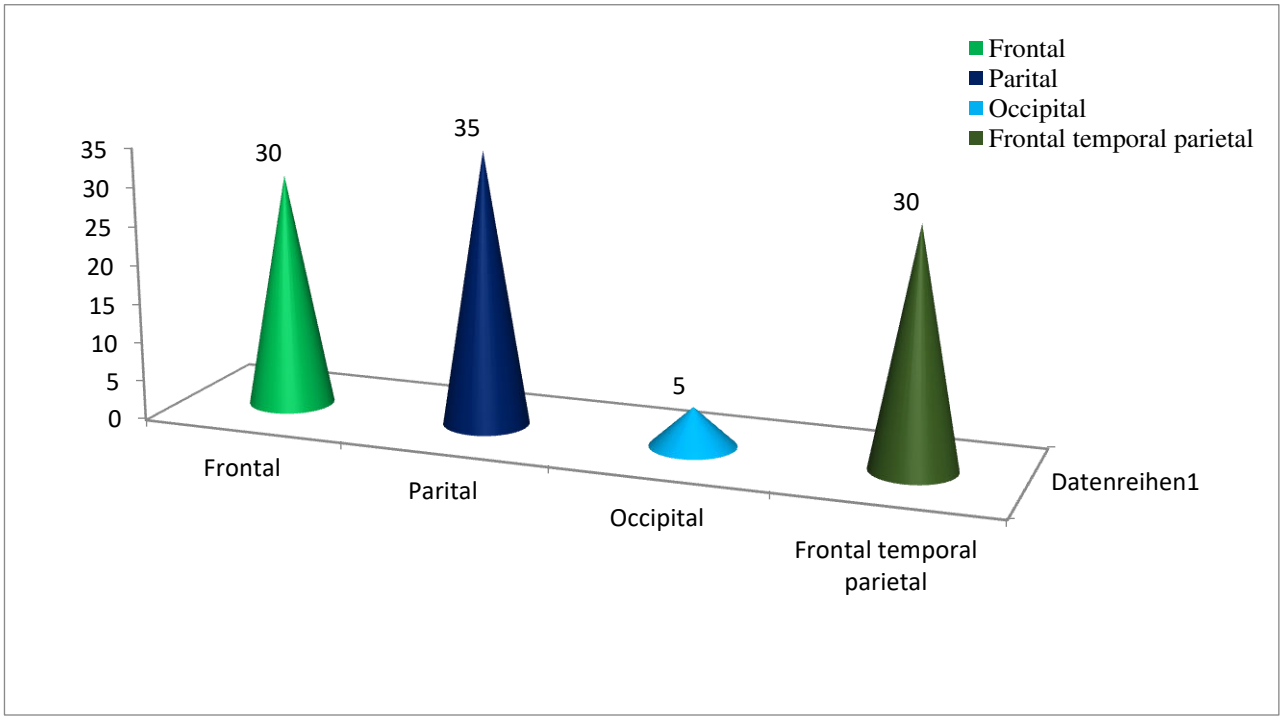


**Figure 9: Distribution of Samples According to Type of Craniotomy**

**SECTION B: Description of Subjects According to Physiological Variables**

Table:2 Distribution of subjects according to physiological variables

| S. No | Parameters | | Frequency(n=20) | Percentage(%) |
|---|---|---|---|---|
| 1 | Systolic BP mm hg | Normal(90-140) | 14 | 70 |
| | | HTN(>140) | 6 | 30 |
| 2 | Diastolic BPmm hg | Normal(60-90) | 14 | 70 |
| | | HTN(>90) | 6 | 30 |
| 3 | Heart rate | Normal(60-100) | 19 | 95 |
| | | Tachycardia(>100) | 1 | 5 |
| 4 | Respiratory rate | Normal(12-26) | 19 | 95 |
| | | Tachypnea(>26) | 1 | 5 |
| 5 | SPO2 in % | Normal(95-100) | 20 | 100 |
| | | Desaturation(<95% | 0 | 0 |
| 6 | Temperature in farenheit | Normothermia(95-99) | 14 | 70 |
| | | Hyperthermia(>99) | 5 | 25 |
| | | Hypothermia(<95) | 1 | 5 |
| 7 | Blood glucose in mg/dl | Normoglycemia(80-150) | 12 | 60 |
| | | Hyperglycemia(>150) | 8 | 40 |
| 8 | Electrolyte imbalance | Normal electrolyte balance | 18 | 90 |
| | | Hypokalemia(<3.5) | 1 | 5 |
| | | Metabolic acidosis | 1 | 5 |
| 9 | Anti hypertensive | Labetolol | 1 | 5 |
| | | Metoprolol | 1 | 5 |
| | | Carvedilol | 1 | 5 |
| | | Diltiazem | 1 | 5 |
| | | Adalact | 2 | 10 |
| | Anti diabetes | Human actrapid | 8 | 40 |
| | | Glimepiride | 4 | 20 |
| | | Metformin | 4 | 20 |
| | Anti epileptic | Levipril | 20 | 100 |
| | Analgesic | Perfalgan | 20 | 100 |
| | Ulcer prophylaxix | Pantoprazole | 20 | 100 |
| | Anti emetic | Emeset | 20 | 100 |
| 10 | Nutrition | Oral | 15 | 75 |
| | | IVF | 4 | 20 |
| | | RTF | 1 | 5 |

Table:2 depicts of subjects based to physiological variables such as Systolic and diastolic BP mm hg**,** heart rate, respiratory rate**,** SPO2 in %, temperature in farenheit, blood glucose in mg/dl, **e**lectrolyte imbalance, medication and nutrition**.**

Based on the blood pressure, 70% (n=14) had normal systolic Blood pressure, 30% (n=6) were hypertensive and 70%(n=14) of subjects had normal diastolic BP. Majority 95% (n=19) of subjects had normal heart rate and 5%(n=1) had tachycardia. 95% (n=19) had normal respiration and 5% (n=1) had tachypnoea. 100% (n=20) of subjects had normal saturation level.

On the basis of temperature, 70% (n=14) of subjects were normothermic, 25% (n=5) were hyperthermic and 5% (n=1) were hypothermic. 60% (n=12) had normoglycemia and 40% (n=8)had hyperglycemia. regarding electrolyte imbalance 90%(n=18)were maintained normal body fluids and electrolyte, 5% (n=1)had hypokalemia,5%(n=1)had metabolic acidosis.

Regarding antihypertensive drug similar proposition 5% (n=1) subjectes were Labetolol, metoprolol, carvedilol, diltiazem and 10% (n=2) were adalact. Based on anti diabetes drug 40% (n=8) were human actrapis, 20% (n=4) had glimepiride, and, 20% (n=4) were metformin. Out of 20 samples 100% (n=20)had levipril,perfalgan, pantaprazole and emeset. Regarding nutrition75% (n=15) were oral, 20% (n=49 were IVF and remaining 5% (n=1) were RTF.

**SECTION C: Description of Subjects According to Pain Score following Craniotomy**

Table:3 Distribution of participants according to their pain score following craniotomy

| S.NO | Details | Level | I POD | II POD | III POD | IV POD | V POD |
|---|---|---|---|---|---|---|---|
| 1 | Severity of pain | Mild | - | 3 | 7 | 10 | 11 |
| | | Moderate | 8 | 6 | 3 | 2 | 1 |
| | | Severe | 4 | 3 | 2 | - | - |

Table: 5 Descries of subjects according to pain score following craniotomy. Out of 20 samples 60% (n=12) of them had pain, on basis of I POD maximum subjects 40% (n=8) had moderate pain, 20% (n=4) had severe pain.

Regarding II POD equal proposition of subjects 15% (n=3) had mild and severe pain, remaining 30% (n=6) had moderate pain. On III POD 35% (n=7) had mild pain, 15% (n=3) had moderate and 10% (n=2) had severe pain. Regarding IV POD majority of subjects 50% (n=10) had mild pain, only few 10% (n=2) had moderate pain. Based on V POD almost 55% (n=11) of subjects had mild pain, only 5% (n=1) had moderate pain.

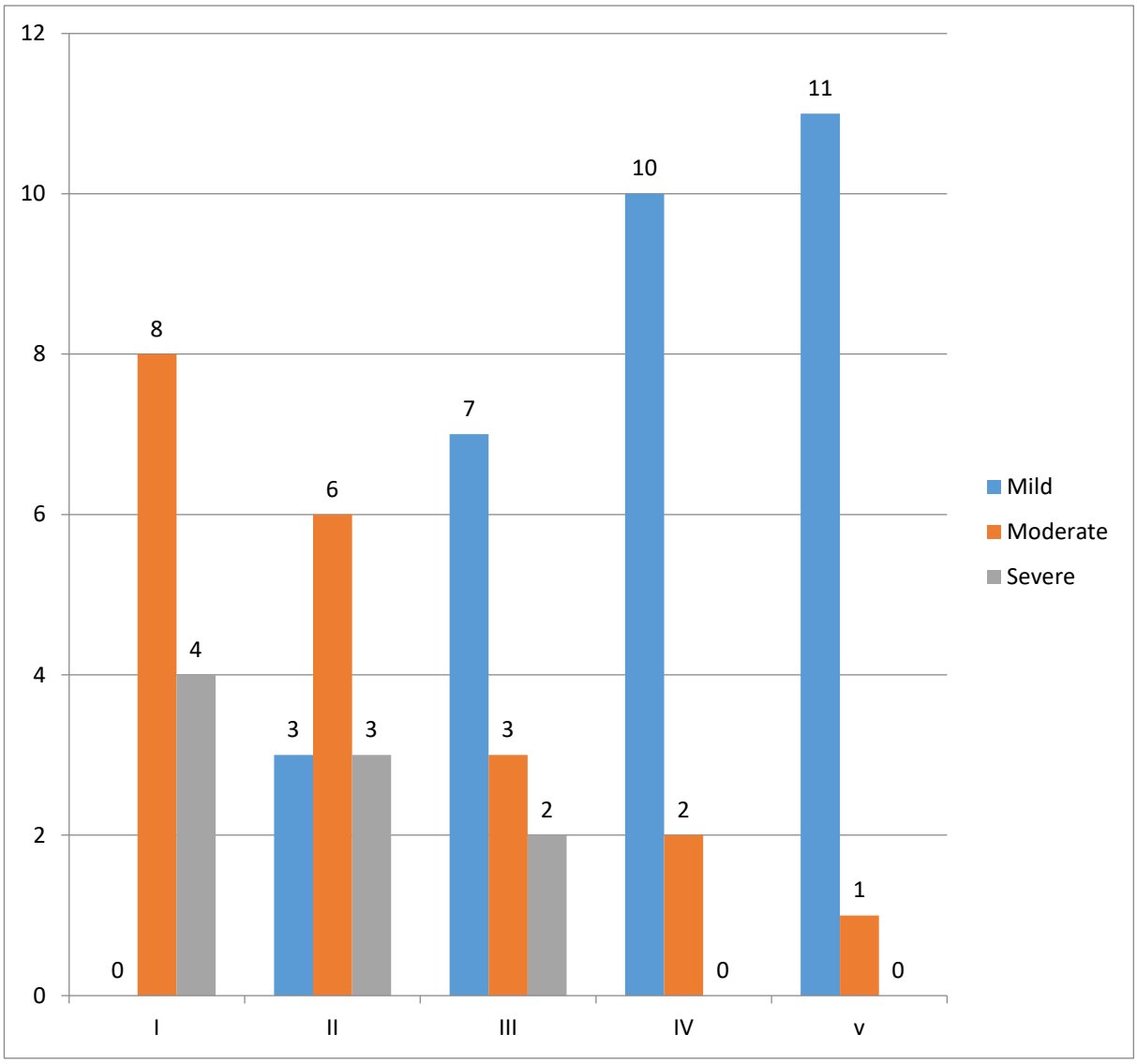


**Figure 10: Distribution of subjects according to pain score following craniotomy**

**SECTION - D: Description of Surgery Related Details of Subjects**

Table: 4 Distribution of surgery related details of subjects

| S. NO | Surgical Details | | Frequency (n=20) | Percentage (%) |
|---|---|---|---|---|
| 1 | Pre operative diagnosis | Glioma | 5 | 25 |
| | | Glioblastoma | 3 | 15 |
| | | Oligodentroglioma | 1 | 5 |
| | | Ependymoma | 3 | 15 |
| | | Meningioma | 6 | 35 |
| | | Papilloma | 1 | 5 |
| | | Cerebellar astrocytoma | 1 | 5 |
| 2 | Position during surgery | Prone | 1 | 5 |
| | | Right lateral | 17 | 85 |
| | | Left lateral | 1 | 5 |
| | | Sitting | 1 | 5 |
| 3 | Duration | <2hours | 2 | 10 |
| | | 2-3 hours | 16 | 80 |
| | | >3 hours | 2 | 10 |
| 4 | approach of surgery | Supra tentorial | 19 | 95 |
| | | Infra tentorial | 1 | 5 |

Table:4 Describes the surgery related details of subjects such as preoperative diagnosis, position during surgery, duration and approach of surgery

Regarding Pre-operative diagnosis ,majority 35%(n=7)of subjects diagnosed as meningioma, 25% (n=5) had glioma, 15% (n=3)of subjects had equal proposition of glioblastoma and Ependymoma, very few 5%(n=1)of participants had diagnosed with oligodentroglioma,papilloma and cerebellar astrocytoma. Regarding position during surgery,majority85%(n=17) of patients were in right lateral, remaining 5%(n=1)of subjects had prone, 5%(n=1)left lateral and5%(n=1) sitting position.

Out of 20 samples,80%(n=16)subjects had minimum duration of surgery, 10%(n=2)had 2-3 hours and only 10%(n=2)had a maximum >3hours duration of surgery. Among 20 sample, most 95%(n=19) subjects underwent supratentorial surgery ,remaining 5%(n=1) underwent infratentorial approach.

**SECTION - E: Description of Subjects According to Ventilatory Assistance and Respiratory Parameters following Craniotomy**

Table :5 Distribution of participants based on ventilatory assistance and respiratory parameters following craniotomy

| S. NO | VENTILATOR DETAILS | | FREQUENCY (n=20) | PERCENTAGE (%) |
|---|---|---|---|---|
| 1 | Ventilatory assistance | Yes | 20 | 100 |
| 2 | Duration of ventilation | <2 hours | 2 | 10 |
| | | 2-4 hours | 16 | 80 |
| | | >4hours | 2 | 10 |
| 3 | Weaning difficulties | Yes | 1 | 5 |

Table: 5 Describes the ventilatory assistance and respiratory parameters following craniotomy. Regarding ventilatory assistance 100%(n=20) had ventilator support to maintain normal breathing pattern.10%(n=2)had <2 hours ,80%(n=16) had between 2-4hours and 10%(n=2) had >4 hours of ventilation. Based on weaning from ventilator 5%(n=1)had weaning difficulty.

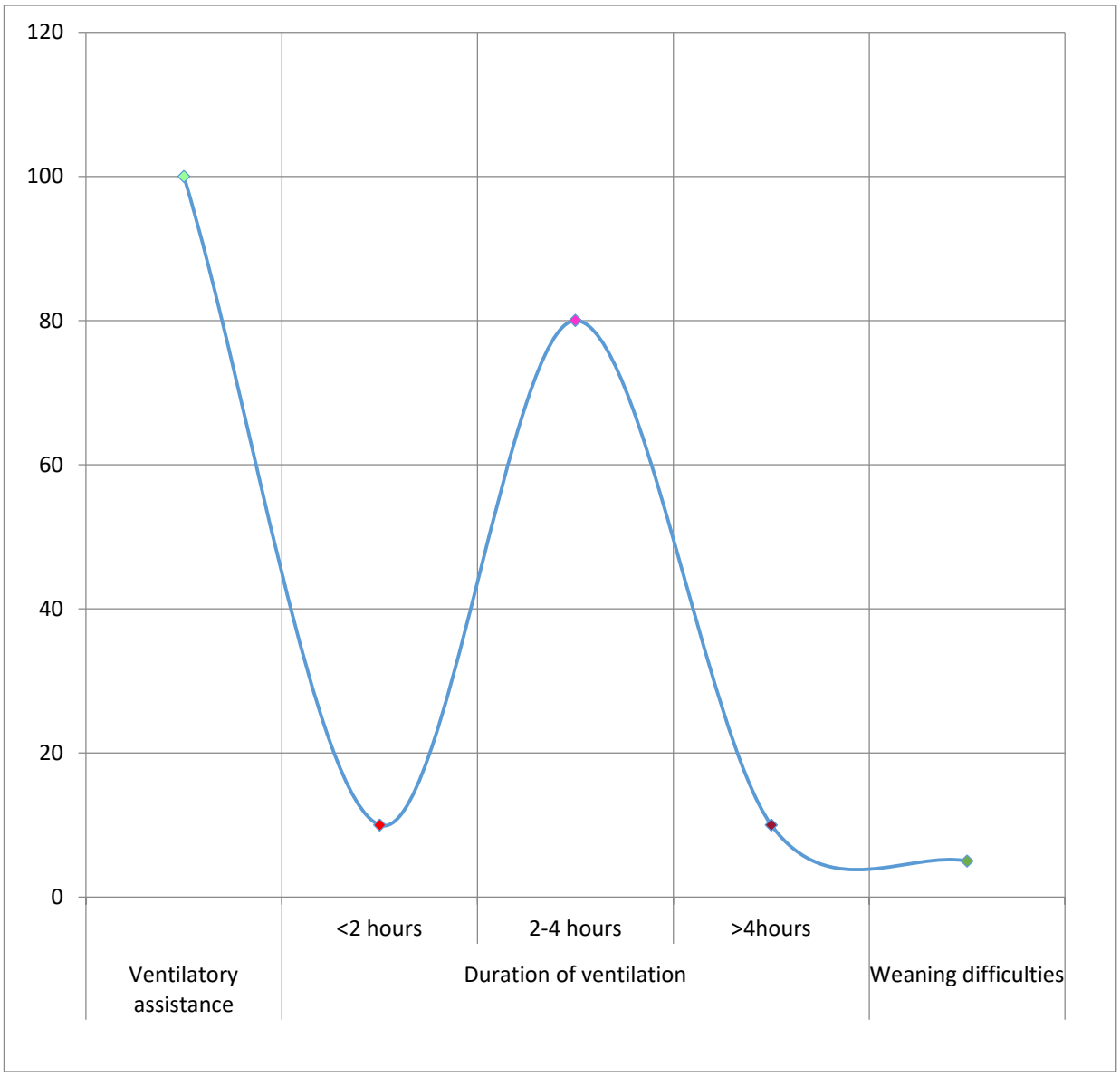


**Figure 11: Distribution of participants based on ventilatory assistance and respiratory parameters following craniotomy**

**SECTION - F: Description of Subjects According to Length of Stay in Hospital**

Table: 6 Distribution of subjects according to length of stay in hospital following craniotomy

| S.NO | Area | No. of days in hospital | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | <1 day | | 1-2days | | 3-4 days | | 5-6 days | | 7-8 days | | >9days | |
| | | f | % | f | % | f | % | f | % | f | % | f | % |
| 1 | Recovery | 18 | 90 | - | - | - | - | - | - | - | - | - | - |
| 2 | ICU | - | - | 2 | 10 | - | - | - | - | - | - | - | - |
| 3 | Ward | - | - | - | - | 1 | 5 | 16 | 80 | 2 | 10 | - | - |
| 4 | Readmission | - | - | - | - | - | - | - | - | - | - | 1 | 5 |

Table: 6 Depicts of subjects according to length of stay in hospital. In this 90% (n=18) were stayed in recovery <1day, 10% (n=2) were in ICU between 1-2 days. Regarding ward 5% (n=1) of subject stayed 3-4 days, maximum 80% (n=16) of participants were between 5-6 days, 10% (n=2) were between7=8 days. Only 5% (n=1) had readmission and stayed more than 9days in hospital.

**SECTION - G: Description of Elicited Problems of the Samples**

Table: 7 Distribution of Samples According to Elicited Problems.

| S. No | Elicited problems | Frequency(n=20) | Percentage(%) |
|---|---|---|---|
| 1 | Headache | 17 | 85 |
| 2 | Pain | 12 | 60 |
| 3 | Hyperglycemia | 8 | 40 |
| 4 | Nausea | 7 | 35 |
| 5 | Hypertension | 6 | 30 |
| 6 | Hyperthermia | 5 | 25 |
| 7 | Muscle weakness | 5 | 25 |
| 8 | Vomiting | 5 | 25 |
| 9 | Anemia | 3 | 15 |
| 10 | Increased ICP | 3 | 15 |
| 11 | Seizure | 2 | 10 |
| 12 | Constipation | 2 | 10 |
| 13 | Aphasia | 1 | 5 |
| 14 | CSF leakage | 1 | 5 |
| 15 | Diplopia | 1 | 5 |
| 16 | Hematoma | 1 | 5 |
| 17 | Hypokalemia | 1 | 5 |
| 18 | Metabolic acidosis | 1 | 5 |
| 19 | Tachypnea | 1 | 5 |
| 20 | Tachycardia | 1 | 5 |

Table: 7 Describes the Samples according to the elicited problems. Among 20 samples majority85%(n=17) of them had headache,60% (n=12) had pain, 40% (n=8) had hyperglycemia , 35%(n=7) had nausea ,30%(n=6)had hypertension. Hyperthermia, muscle weakness, and vomiting was observed among 25% (n=5) of samples. Similar value of 15%(n=3)was found among anemia, and increased ICP. The problems such as constipation and seizure had only 10%(n=2)., Least 5%(n=1) of participants had aphasia, diplopia, epidural hematoma, hypokalemia ,CSF leakage, metabolic acidosis ,tachypnea and tachycardia.

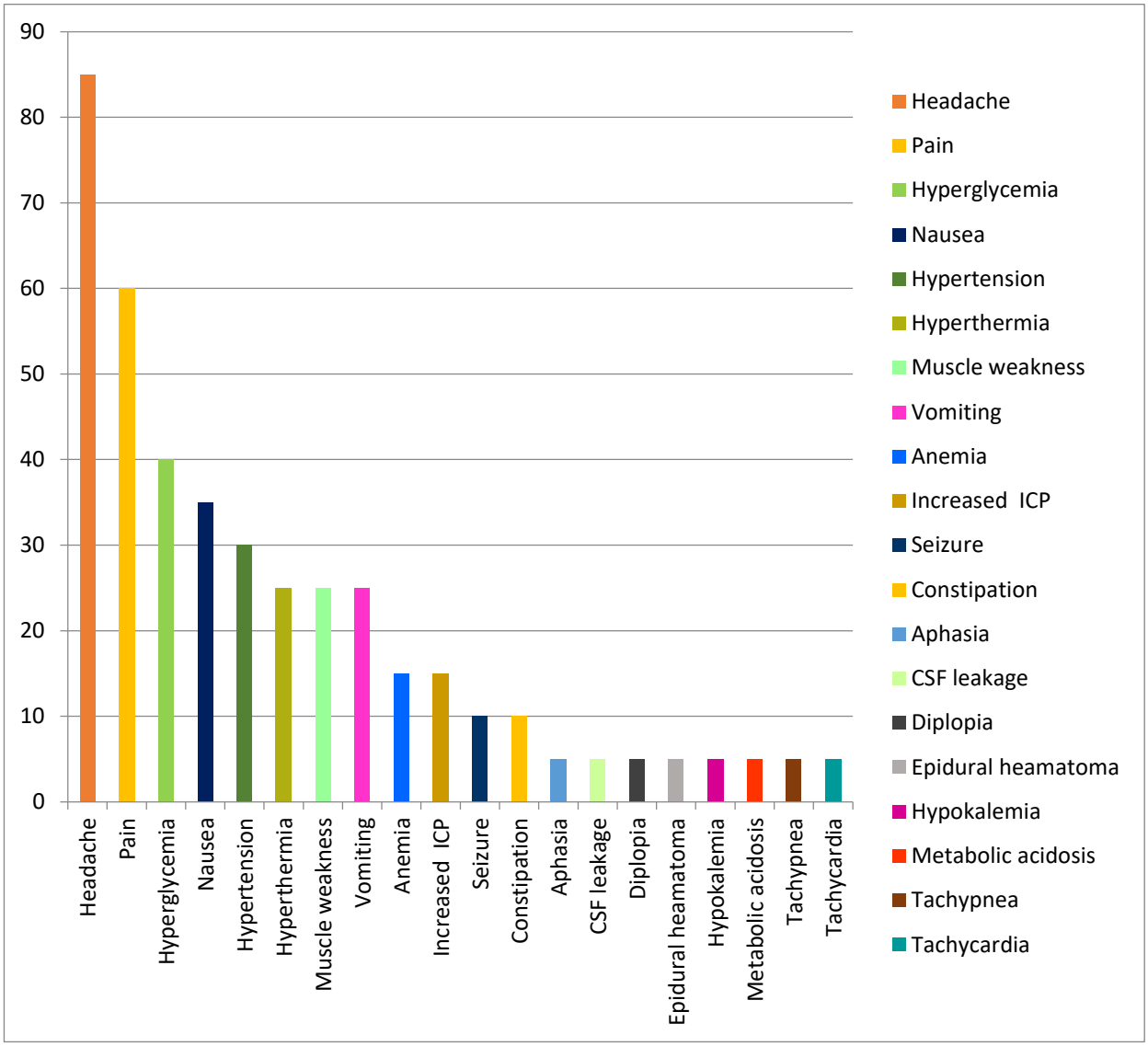


**Figure 12: Distribution of Samples According to the Elicited Problems.**

**SECTION: H Description of Problems of the Subjects with time Duration**

Table: 8 Distribution of subject problems with in limited time duration

| S.NO | Elicited problems | With in 24 hours | | 25-48 hours | | 49-72 hours | | >72 hours | |
|---|---|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % | f | % |
| 1 | Headache | **7** | **35** | **5** | **25** | **5** | **25** | **-** | **-** |
| 2 | Pain | **10** | **50** | **2** | **10** | **-** | **-** | **-** | **-** |
| 3 | Hyperglycemia | **8** | **40** | **-** | **-** | **-** | **-** | **-** | **-** |
| 4 | Nausea | **5** | **25** | **2** | **10** | **-** | **-** | **-** | **-** |
| 5 | Hypertension | **6** | **30** | **-** | **-** | **-** | **-** | **-** | **-** |
| 6 | Hyperthermia | **2** | **10** | **3** | **15** | **-** | **-** | **-** | **-** |
| 7 | Muscle weakness | **3** | **15** | **2** | **10** | **-** | **-** | **-** | **-** |
| 8 | Vomiting | **3** | **15** | **2** | **15** | **-** | **-** | **-** | **-** |
| 9 | Anemia | **3** | **15** | **-** | **-** | **-** | **-** | **-** | **-** |
| 10 | Increased ICP | **2** | **10** | **1** | **5** | **-** | **-** | **-** | **-** |
| 11 | Seizure | **1** | **5** | **1** | **5** | **-** | **-** | **-** | **-** |
| 12 | Constipation | **-** | **-** | **-** | **-** | **-** | **-** | **2** | **10** |
| 13 | Aphasia | **1** | **5** | **-** | **-** | **-** | **-** | **-** | **-** |
| 14 | CSF leakage | **-** | **-** | **-** | **-** | **-** | **-** | **1** | **5** |
| 15 | Diplopia | **1** | **5** | **-** | **-** | **-** | **-** | **-** | **-** |
| 16 | hematoma | **-** | **-** | **1** | **5** | **-** | **-** | **-** | **-** |
| 17 | Hypokalemia | **-** | **-** | **1** | **5** | **-** | **-** | **-** | **-** |
| 18 | Metabolic acidosis | **1** | **5** | **-** | **-** | **-** | **-** | **-** | **-** |
| 19 | Tachypnea | **1** | **5** | **-** | **-** | **-** | **-** | **-** | **-** |
| 20 | Tachycardia | **1** | **5** | **-** | **-** | **-** | **-** | **-** | **-** |

Table:8 Depicts the problems with in limited time duration such as <24 hours, <48 hours ,<72 hours and < 72 hours. On the basis of <24 hours 5%(n=1) of them had aphasia, 15%(n=3) had Anemia,5%(n=1)had diplopia,35%(n=7)had headache,30%(n=6) had HTN,40%(n=8)had hyperglycemia,10%(n=2) Had hyperthermia,10%(n=2)had increased ICP,5%(n=1)had metabolic acidosis,25%(n=5)had nausea,15%(n=3)had muscle weakness,50%(n=10)had pain, equal proposition 5%(n=1)had seizure, tachypnoea and tachycardia,15%(n=3)had vomiting.

Occurrence of problems <48 hours were epidural hematoma 5%(n=1),25%(n-5) had headache,5%(n=1) had hypokalemia, 15%(n=3) Had hyperthermia,5%(n=1)had increased ICP,5%(n=1),10%(n=2) had nausea, 10%(n=2) had muscle weakness, 10%(n=2) had pain, equal proposition 5%(n=1)had seizure, 10%(n=2)had vomiting.Very less problems arised on <72 hours were 25%(n=5) of subjects had headache

Over 72 hours time duration 5%(n=1)samples had CSF leakage and only 10%(n=2) had constipation.

## Section I: Description of the elicited problems, executed nursing interventions and its evaluation for the respective samples.

**Sample 1:** Mr. A ,43years young man was admitted on 08.03.17 at 6am , with the complaints of headache and drowsiness .He was diagnosed to Right Parietal meningioma and underwent Right Parietal Craniotomy.

**Table 9 :Nursing interventions based on elicited problems**

| Nursing assessment | Nursing diagnosis | Goal | Implementation | Evaluation |
|---|---|---|---|---|
| Subjective data:<br>Subject Complaints of having headache<br><br>Objective data:<br>➢ Altered mental status<br>➢ Behavioural changes<br>➢ GCS-12/15<br>➢ Pupils-3mm reacting to light<br>➢ BP-160/90mmhg<br>➢ HR-100b/mt | **Ineffective cerebral tissue perfusion** related to decreased cerebral blood flow as evidenced by Irritability and headache. | Subjects maintains adequate cerebral tissue perfusion as evidenced by Improved mental status | • Assessed mental status periodically in order to detect the increase in ICP<br>• Elevated the head end 30 to 45 degrees to promote venous outflow from brain thereby it reduces the pressure<br>• Minimized measures such as coughing, vomiting, straining, flexion of neck. This may lead to decrease in cerebral blood flow<br>• Administered anticonvulsants as per the order to reduce the risk for seizures.<br>• Controlled the environmental temperature and also prevent fever. This may increase the workload of brain leading to increase in ICP<br>• Provided rest periods between activities. Constant activity may lead to cumulative stimulant effect thereby increases the ICP.<br>• Monitored the intake and output of the patient. Retention causes autonomic nervous system stimulation.<br>• Administered oxygen / ventilate as per the patient's need. Hypercapnia leads to increased ICP. | Subjects maintained adequate cerebral tissue perfusion as evidenced by Improved mental status GCS-14/15 |

| Nursing assessment | Nursing diagnosis | Goal | Implementation | Evaluation |
|---|---|---|---|---|
| Subjective data:<br><br>Subject Compliaints of having pain on surgical site<br><br>Objective data:<br>➢ Pain score4/10<br>➢ Facial expression shows sad | **Acute pain** related to surgical procedure as evidenced by facial expression | Minimize pain as evidenced by subjects feel comfortable | • Ascertained thelocation,nature and intensity of pain periodically<br>• Provided non pharmacological relief measures as appropriate for eye edema-eye patches,for immobility- frequent position change and back rubs.<br>• Inspected surgical site for swelling, redness and oozing<br>• Slightly raised head of the bed ,reduce bright lights and room noise,loosen head dressing if constricted<br>• Administerd analgesic like inj.perfalgan Igm,IV/BD as per order. | Subjects maintained adequate cerebral tissue perfusion as evidenced by Improved mental status GCS-14/15 |

| Nursing assessment | Nursing diagnosis | Goal | Implementation | Evaluation |
|---|---|---|---|---|
| Subjective data:<br>➢ Complaints of inability to ambulate autonomously<br><br>Objective data:<br>➢ inability to move purposefully with physical environment<br>➢ inability to perform action as instructed<br>➢ limited ROM<br>➢ reluctance to attempt movement | **Impaired physical mobility** related to Muscle weakness. as evidenced by inability to move in bed or do activities | • Subject performs physical activity independently or within limits of disease. | • Assisted patient for muscle exercises. It adds to gain sense of balance.<br>• Provided bed rails to prevent falls<br>• Enhanced passive or active ROM to increase venous return and to prevent stiffness<br>• Provided appropriate mattress to decrease pressure and to prevent complications<br>• Encouraged early ambulation to enhance self esteem and to improve independence<br>• Provided mobility devices ( trapeze, crutches, walkers)to enhance the level of activity<br>• Done position changing every 2 hourly as it optimizes the circulation to all tissues<br>• Kept limbs in functional and anatomical alignment to prevent complications such as contractures and foot drop | • Subject demonstrated use of adaptive devices to increase mobility |

| Nursing assessment | Nursing diagnosis | Goal | Implementation | Evaluation |
|---|---|---|---|---|
| Subjective data:<br><br>Subject cmpliants that inability to do activities of daily living<br><br>Objective data:<br>➢ Poor personal hygiene | **Self care deficit** related to decreased strength and endurance as evidenced by inability to put on or off clothes and inability to bathe and groom | *Subject demonstrates lifestyle changes to meet self care needs<br><br>*Subject identifies useful resources in optimizing the autonomy and independence in taking care of self | • Established short term goal with the patient to reduce frustration<br>• Provided positive reinforcement for all activities attempted. This may help in progress of the patient<br>• Provided necessary items for self care beside or at reach of the patient to decrease strain<br>• Met all the self care needs when the patient is unable. This helps in enhancing self esteem<br>• Provided privacy during all the self care activities as it is fundamental for all human beings<br>• Established regular activities and provide rest periods to prevent fatigue<br>• Educated the family / caregiver the techniques in meeting self care needs of the patient | Subject safely executed self care activities to utmost capability as evidenced by ability to feed and move |

## SECTION - J

## ASSOCIATION BETWEEN SELECTED DEMOGRAPHIC VARIABLE WITH ELICITED PROBLEMS

**Table 10: Criteria ratio for the mean difference between the GCS Score on Admission and the Number of Elicited Problems.**

| S. No | GCS score on admission | N | Mean | SD | Mean differences | 't' value |
|---|---|---|---|---|---|---|
| 1 | 3-8 | 1 | 0.35 | 1.48 | | |
| 2. | 9-12 | 2 | 0.9 | 3.82 | 12.9 | 11.96*** |
| 3. | 13-15 | 17 | 12.35 | 52.46 | | |

*** P< 0.001 level

As shown in table 4, the 't' value 11.96 for the mean difference between the GCS score on admission and the number of elicited problems is higher than the table value and it is ***P 0.001 level. It means that there is significant relationship between the total number of elicited problems and GCS score on admission .The GCS score 3 to 8,9 to 12 and 13 to15 were 0.35,0.9 and 12.35respectively.

# CHAPTER - V

# DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with discussion, summary and conclusion drawn from the study. The study limitations, implications and recommendations in different areas of nursing practice, nursing administration, nursing research and nursing education in the future are considered here.

When surgery is done near to the brain the complication can be very serious .Many guidelines have been developed for management of craniotomy patients. This study helps to early identification of problems, improve the quality of nursing care and reduce craniotomy related complication.

The present study is an evaluatory approach and case study design was used to elicit problems and execute nursing interventions on patients underwent craniotomy surgeries with a view to develop nursing strategy to care patients with craniotomy until discharge.

The study was conducted among 20 patients. Data was collected from NICU,SICU, MICU and Neuro ward of kovai medical center and hospital, Coimbatore. The samples were selected as per inclusion criteria. Data was collected using Non probability purposive technique. The investigator elicitied the problems of the patients after craniotomy and executed nursing interventions. Subjects were assessed for complications.

Assessment tool was used to assess the occurrence of post operative complications among tumour excision patients. The assessment tool comprises of recording of physical and physiological parameters after craniotomy.

## DISSCUSION

### Demographic variables of subjects undergone craniotomy

Majority of the subjects, 55%(n=11) were age group of 20-40 years, 8(40%) were age group of 41-60 years, 5% (n=1) were age group of 61-80 years. with regards to sex, 65% (n=7) were male ,BMI,(50%) were 18.5-25, regards to marital status ,(75%)were married, with regards to GCS Score on Admission (85%)were comes under13-15(Mild), 10% were 9-12 (Moderate), 5%(n=1) were 3-8 (Severe) category, with regards to Co-Morbidity, Diabetic Mellitus were 60%(n=12),HTN, 30%(n=6), Ischemic Heart Disease 10%

(n=2).Based on Personal History of Bad Habits, 45%(n=9) were smokers, 25%(n=5) Alcoholism, 5%(n=1) Tobacco Chewing. With regards of Type of Craniotomy, 30%(n=6) had Frontal, 35%(n=7) Parietal,5%(n=1) Occipital,30%(n=6) Fronto temporo & parietal.

**The first objective of the study was to elicit the problems of patients following craniotomy**

Among 20 samples majority 85% (n=17) of them had headache, 60% (n=12) had pain, 40% (n=8). Hyperglycemia was noticed in 40% (n=8) of the samples. Among this seven samples was known case of diabetic mellitus. The other one samples blood glucose was 160-190mg/dl throughout the study period. Nausea experienced by 35% (n=7) of the samples. Among this 4 of them were male. Hypertension was experienced by 30% (n=6) of the sample. Among this four sample was known diabetic mellitus and two of them are smokers. Only one sample was fall below the age group of 40 years.

Hyperthermia, Muscle weakness and Vomiting was elicited among 25% (n=5) samples among this one was alcoholic. Similar value 15% (n=3)was found among Anemia and Increased ICP. In this two subjects was falls age group above 40 years.

Occurrence of Constipation and Seizure had the similar value 10(n=2).among this 5% (n=1) was known hypertensive and fall the age group of above 60 years. Aphasia, diplopia, epidural heamatoma, hypokalemia, CSF leakage, Metabolic acidosis, tachypnea and tachycardia experienced by only 5% (n=1 )sample .Both sex are involved equally.

The present study finding was substantiated by similar study done by Lonjaret (2016) assessed Postoperative complications after craniotomy for brain tumor surgery. Twenty-one (11%) of the patients were kept sedated after surgery; the remaining 167 patients were studied. Thirty one percent of the patients presented at least one complication (25% with postoperative nausea and vomiting (PONV), 16% with neurologic complications). The occurrence of neurological complications was significantly associated with the absence of preoperative motor deficit and the presence of higher intra operative bleeding. Seven patients (4%) were readmitted to the ICU after discharge; 43% ($n = 3$) of them had a posterior fossa surgery.

**The Second objective of the study was to execute the nursing interventions on patients patient subjected to craniotomy for tumour excision**

The Nursing interventions related to the elicited problems were executed on patients with craniotomy to achieve homeostasis.

Popov (2009) conducted a study on Nurse interventions and the complications in the post-anesthesia recovery room. It aimed to identify more frequent complications in the post-anesthetic recovery period, and to correlate performed nursing interventions and the work schedule of nurses at PARRs with the complications. The prevalent complications in the PARR were pain in 216 (54%) patients in the immediate post-operatory period, followed by hypothermia in 174 (43%) patients. It was observed that the significant results are related to nausea and vomiting, hypoxemia, and hypothermia presenting p values of 0,0010, $p < 0,0001$ and $p = 0,0417$, respectively. For hypotension intravenous hydration, vasoconstriction, complementary exams, such as the hematocrit and the hemoglobin were implemented. Anti-emetic agents was administered for nausea and vomiting persist in 20% to 30% of patients. Hypoxemia were treated with oxygen therapy. Hypothermia were treated with mat heater and medication. Nursing intervention made use of the mat heater for patient with Tremor and chills, bandage were used to stop bleeding.

**The Third Objective of the Study was to Evaluate the Effectiveness of Nursing Interventions executed on patients following craniotomy**

Based on identified problems related nursing interventions were executed on patient underwent craniotomy and were evaluated.

The executed measures to maintain normal blood pressure in 1 (5%) of the sample BP-160/90 mmhg were fluctuated. The remaining 5 (25%) samples had maintained BP-140/90mmhg on the subsequent day of surgery. For one of the sample had Epidural heamatoma. The measures were instituted to evacuate the hematoma to stabilize the level of consciousness.

The non pharmacological measures such as removing sheet, provide cooling blanket were executed for 25% (n=5) of the samples had hyperthermia. It was successful for 5%

(n=1) of the sample and the remaining 20% (n=4) of the samples needed antipyretic medication like Tab. paracetamol to maintain normothermia.

Seizure was controlled by sedation like Inj.diazepam and anti-epileptic medication like Inj.levipril for 5% (n=1) samples who experienced seizure and were prevented from aspiration and injury. Out of twenty samples only one developed CSF leakage .The executed measure resuturing was done to control of leakage within 24 hour and there was no evidence of meningitis. The same sample had readmission on seventeenth post operative day.

The measured were instituted to stabilize the tachycardia and tachypnea was successful with fluid resuscitation and medication such as Inj.nor adrenaline and Inj.adrenaline. For 25% (n=5) samples with vomiting and 53% (n=7) of samples with nausea the instituted measures were successful with antiemetic medication Inj.emeset. Out of 20 sample majority 17of the sample developed headache were managed with Head end elevation, reduced bright lights ,room noise and analgesic like Tab.dolo 650mg.

The measures were executed for 40% (n=8) of the samples with hyperglycemia were treated with effective measures like anti-diabetic drug like Inj. human actrapid as per protocol and following diabetic diet. The measures executed for 20% (n=2) of the samples with constipation were relieved with suppositories and enema.

Out of 20, 25% (n=5) of the had muscle weakness. measures were initiated were assisted in daily activities, supported in doing active and passive exercises and provides assistive devices. Among 15% (n=3) were developed anaemia, 5% (n=1) of were received blood transfusion other were treated with iron rich diet.

Majority of samples 60%(n=12) were experienced pain in the first 24 hours ,it was managed with non pharmacological relief measures as appropriate for eye edema- eye patches, for immobility-frequent position change and back rubs and administer analgesic like Inj. perfalgan Igm as per doctor order.

With regards 5%(n=1) of sample had metabolic acidosis and it was corrected with administering Sodium bicarbonate and saline IV as per order. Out of 20,3(15%) samples had increased ICP and it was managed with osmotic diuretic like Inj. mannital

Aliasgar (2012) conducated study on Perioperative outcomes following surgery for brain tumors.A total of 286 patients operated upon in the study period, 23 that did not

undergo a craniotomy (stereotactic biopsy, shunt, burr hole) were excluded. Another 67 had extra-axial tumors. Thus 196 patients with intra-axial tumors qualified for this analysis. The median age of our patient set was 38 years. There were 130 glial tumors (66.3%). The non-glial tumors included 38 metastases (19.4%) and 25 embryonal tumors (12.8%) . One hundred and sixty-three patients (83.2%) remained the same neurologically (n = 108 [55%]) or had improved (n = 55 [28%]) postoperatively. Of the 108 who remained the same, only six had improved further till the time of discharge and three had died due to other complications. On the other hand, of the 55 with immediate postoperative improvement, 53 further improved till discharge. Thus, neurological improvement was seen in the immediate postoperative period and was a dynamically sustained phenomenon in those that improved, evolving over the postoperative period. At the same time neurological worsening was encountered in 33 (16.8%), of whom one-third (n=11) had minor deficits (all being transient except one) and two-thirds (n = 22) suffered major deficits (only six improved till discharge). Comparing the postoperative neurological outcomes with the preoperative neurological status revealed that of the 68 (34.7%) preoperative, neurologically normal patients, eight (11.8%) experienced postoperative worsening (three being minor deficits, two of which were transient, and five were major, of which two were transient). There was no mortality in this group. Of the 128 (65.3%) patients with preoperative neurological deficits, 54 (42.5%) remained the same, 46 (38%) had improved, whereas, 25 (19.5%) worsened. All seven patients who died were from this subgroup.

**The Fourth Objective of the Study was to Find out the Association Between Selected Demographic Variables with Elicited Problems.**

The critical ratio showed there is a significant relationship between the GCS score on admission (3-8,9-12 and 13-15 ) and the number of elicited problems and it is significant at P< 0.000 level

Anthofe (2016) conducted Case-Control Study of Patients at Risk of Medical Complications after Elective Craniotomy. Among Of 1800 patients screened, 133 patients (67 women and 66 men aged between 14 and 85 years) had developed medical complications (overall morbidity, 7.4%). We found statistically significant correlations between thromboembolic events and meningioma, previous craniotomy, duration of surgery, and hypertension ($P = 0.002$, $P = 0.032$, $P < 0.001$, and $P < 0.001$, respectively). Severe infection

was associated with age, duration of surgery, and craniopharyngioma and pituitary adenoma ($P = 0.012$, $P = 0.004$, and $P = 0.029$, respectively). Prolonged stay in the intensive care unit was associated with increased duration of surgery and hypertension ($P = 0.002$ and $P < 0.001$).

## SUMMARY

The study was conducted to Elicit the Problems and Execute Nursing Interventions on Patient Subjected to Craniotomy in NICU, SICU, MICU and neuro ward, Coimbatore.

## MAJOR FINDING OF THE STUDY

- During data collection period we identified a total of 20 subjects with brain tumour in NICU, SICU, MICU and Neuro ward. Majority 35%(n=7)of subjects diagnosed as meningioma,25%(n=5) had glioma,15%(n=3)of subjects had equal proposition of glioblastoma and ependymoma, very few 5%(n=1)of participants had diagnosed with oligodentroglioma, papilloma and cerebellar astrocytoma.

- Among 20 sample, most 95% (n=19) subjects underwent supratentorial surgery, remaining 5%(n=1) underwent infra tentorial approach.

- Based on type of craniotomy 30% (n=6) were underwent frontal, 35% (n=7) were parietal, 5% (n=1)were occipital and 30% N=6) were frontal temporal & parietal surgery.

- Elicited problems followed craniotomy such as majority85%(n=17) of them had headache,60%(n=12) had pain, 40%(n=8) had hyperglycemia ,35%(n=7) had nausea ,30%(n=6)had hypertension. Hyperthermia, muscle weakness, and vomiting was observed among 25% (n=5) of samples. Similar value of 15% (n=3) was found among anemia, and increased ICP.

- The problems such as constipation and seizure had only 10% (n=2), least 5% (n=1) of participants had aphasia, diplopia, epidural hematoma, hypokalemia, CSF leakage, metabolic acidosis, tachypnea and tachycardia.

- Hypertension was noted during post operative period and as treated with anti hypertensive medication. Only 2 sample had seizure and was treated with inj. levipril,

vomiting 5(25%)was treated with inj.emeset ,pain 12(60%)was treated with inj. perfalgan.

- Fever was treated with non pharmacological measures and antipyretic drug. Only one had CSF leakage and underwent for resuturing.
- Increased ICP treated with Inj.manitol and 3%Nacl. Constipation was treated with laxative agent and fiber rich diet.
- Metabolic acidosis was corrected with administering Inj.sodium bicarbonate and fluid administration.
- Very few 5% (n=1) of subject had weaning difficulty, maximum of subjects 80% (n=16) were on ventilation between 2-4 hours duration only.
- Average length of stay in hospital following craniotomy surgery was 5-6 days in 80% (n=16) subjects.
- The critical ratio between the GCS score on admission and the number of elicited problems associated by using one sample 't' test. The 't' value for the mean difference between the GCS score on admission and the number of elicited problems is 11.96 which is found to be significant at *** P< 0.000 level.

**CONCLUSION**

Neurosurgery is a rewarding career choice, but there are many challenges and stressors that can lead to lower levels of satisfaction and dangerously increased level of burnout. Male sex could predispose to complication. The independent predictors of mortality in the present series were seizure, and reoperation for hematoma. Most of the problems arises at the initial 48 hours of post operative period. Prompt nursing assessment and priority based interventions was help to reduce the secondary problems of patients underwent craniotomy surgery. There is a significant association between GCS score admission and total number of elicited problems

## IMPLICATIONS

Nurses who are with the patient around the clock play a vital role in the post operative care of patient with craniotomy surgery. The findings of the study have several implications in nursing.

### Nursing practice

1. The study gives awareness among the nurses in identifying the problems and complication at an early stage
2. In Neuro Intensive Care Unit ,this study will provide insight among the nurses to detect certain problems like neurological deficit, increased ICP, sensory and motor losses, fluid and electrolyte imbalance
3. Nursing module will help in planning nursing intervention at an early stage.
4. The study designed to improve patients' health behaviors and health status
5. The present nursing module can be used by the nurses in various critical care setting.

### Nursing education

1. Integration of theory and practice is a vital need and it is important in nursing education. This study will implicate among learners to develop observational skills and do systematic assessment which will help them to detect the problems and motivate them to render care to the patient at an early stage.
2. It also promote curiosity among learners to participate with multi health team members to provide collaborative care.
3. Nursing module can be used to teach the novice nurse in Neuro Intensive Care Unit regarding care of patient with craniotomy
4. Nursing module direct the nurse educator to teach the students to anticipate problems of patients underwent craniotomy and execute of priority based nursing intervention at a moment
5. Study help the nurses to early detection and identification of existing problems need quick assessment skills to provide better care

**Nursing research**

1. This study findings will serve as a background for further study regarding the care of patients with craniotomy

2. Utilization of findings and dissemination of knowledge in nursing practice will help to prevent complications at an early stage.

3. Finding of the study will help the nurse educator to develop ongoing assessment care and technology that made in health care system.

4. The study will imply the nurse educator to motivate learner to select a related study with all dimensions namely physical, mental, social, environmental and spiritual changes encountered by the subject who underwent craniotomy.

5. Nurse educator can also arrange a mass health education programme to the public to create awareness regarding Preventing Postoperative Complications for Patients after Intracranial Surgery.

6. The study direct the nursing personnel to broaden their knowledge and skills to elicit and manage the problems of patient with craniotomy.

7. Thorough research dissemination of knowledge will give a vision for growing autonomy in nursing discipline.

**Nursing administration**

1. Through research findings the institution can formulate policy and procedures on care of patients with craniotomy at given setup by conducting further research in this area to standardize the care.

2. Nursing administrator can plan and organize in service education programme to the nurses based on the study findings

## LIMITATIONS

1. The study was limited to minimum sample and hence it could not be generalized
2. The investigator did not have any control over the pre existing illness which adversely affect the outcome

## RECOMMENDATIONS

1. The study can be replicated using large sample size to generalize the findings.
2. A study can be undertaken to compare the findings in two different settings
3. A similar study can be done based on experimental design
4. Retrospective study can be done with large sample.
5. A study can be done with all other intra cranial surgeries.

## ABSTRACT

The study entitled "Eliciting Problems and Execution of Nursing Interventions among Patients Subjected to Craniotomy for Tumour Excision at Kovai Medical Center and Hospital, Coimbatore".

**Objective :** The main aim of the study was to Elicit the problems of patients undergoing craniotomy, execute the nursing interventions on patients subjected to craniotomy for tumour excision, evaluate the nursing interventions execute on patients undergoing craniotomy and find out the association between selected demographic variables with elicited problems**. Design**: Case study design. **Setting:** Kovai Medical Center and Hospital, Coimbatore. **Sample size:** 20 adult patient with craniotomy for tumour excision. **Conceptual Frame Work**: Modified Ida Jean Orlandos Nursing Process Theory (1961).**Data Collection Procedure:** After obtaining ethical clearance from concerned authority, verbal consent from the participants demographic profile was collected. Post operative problems were identified by using assessment tool**. Results:** The problems elicited on brain tumour with craniotomy surgeries were headache 85% (n=17), pain 60% (n=12), hyperglycemia 40% (n=8), nausea 35% (n=7), hypertension 30% (n=6), hyperthermia, muscle weakness, and vomiting was elicited among 25% (n=5) samples. Similar value 15% (n=3)was found among anaemia, and increased ICP. The problems such as constipation and seizure had the similar 2(10%) occurence. least 5% (n=1)of them had aphasia, diplopia, epidural heamatoma, hypokalemia, CSF leakage, metabolic acidosis, tachypnea and tachycardia. The "t" value 11.96 for the mean difference between the GCS score on admission and the number of elicited problems is higher than the table value and it is significant at 0.000 level. **Conclusion**: Majority of the male underwent craniotomy due to meningioma and had right parietal type of craniotomy. Majority of the problems arised at the initial 48hours of post operative period. Prompt nursing assessment and priority based interventions will help to prevent the complication at an early stage.

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## APPENDIX-B

### (Copy of Letter Seeking Assistance from Medical Expert)

**KMCH COLLEGE OF NURSING**
(Approved by the Government of Tamil Nadu & The Tamil Nadu Nurses & Midwives Council, Chennai.
Recognized by the Indian Nursing Council, New Delhi and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)
KMCH Campus, Avinashi Road, Coimbatore – 641 014. INDIA
Ph: (0422) 4323740, 2369321 Telefax : (0422) 2627525 Website: kmchcon.ac.in E-mail: nursing@kmch.ac.in

Ref No: KMCT/6021/01/17

30th January 2017

To
DR. J.K.B.C. PARTHIBAN, M.CH (NEURO)., FNS (FUJITA.JAPAN),
Consultant Neuro Surgeon,
Kovai Medical Center and Hospital,
Coimbatore – 14

Dear Sir,

Greetings to you.

I submit that one of our M.SC(N) final year students by name Ms.Anisha.C specializing in Medical Surgical Nursing in our College desires to conduct a study titled **"Eliciting Problems and Execution of Nursing Intervention among Patients Subjected to Craniotomy for Tumor Excision at KMCH, Coimbatore"**, as a part of her M.Sc (N) curriculum.

As she is in need of Medical Expert to complete the study, I request you to kindly guide the student.

Thanking you,

Yours Truly,

Prof. DR. S. Madhavi, M.Sc(N)., Ph.D.,
Principal. The Principal,
K.M.C.H. College of Nursing,
P.B. No : 3209, Avanashi Road,
Coimbatore - 641 014.

KMCH COLLEGE OF NURSING COIMBATORE-641014

*Administrative Office :*
Kovai Medical Center Research and Educational Trust
No.940/1A&B, Kovai Estate, Kalapatti Road, Coimbatore - 641 048. INDIA
Ph : ( 0422 ) 2369321 E-mail : info@kmch.ac.in

## APPENDIX-C

## (Certificate of Content Validity)

**CERTIFICATION OF CONTENT VALIDITY**

This is to certify that ,I have pursued the research proposal submitted by Anisha.c that " **ELICITING PROBLEMS AND EXECUTION OF NURSING INTERVENTION AMONG PATIENTS SUBJECTED TO CRANIOTOMY FOR TUMOUR EXCISION AT KOVAI MEDICAL CENTER AND HOSPITAL, COIMBATORE".** I found that the methodology and instruments are appropriate.

PLACE: Coimbatore

DATE: 29.04.2017

SIGNATURE & SEAL

## CERTIFICATION OF CONTENT VALIDITY

This is to certify that ,I have pursued the research proposal submitted by Anisha.c that " **ELICITING PROBLEMS AND EXECUTION OF NURSING INTERVENTIONS AMONG PATIENTS SUBJECTED TO CRANIOTOMY FOR TUMOUR EXCISION AT KOVAI MEDICAL CENTER AND HOSPITAL, COIMBATORE".** I found that the methodology and instruments are appropriate.

PLACE: CBE.

DATE: 29.4.17.

SIGNATURE & SEAL

## CERTIFICATION OF CONTENT VALIDITY

This is to certify that ,I have pursued the research proposal submitted by Anisha.c that " **ELICITING PROBLEMS AND EXECUTION OF NURSING INTERVENTIONS AMONG PATIENTS SUBJECTED TO CRANIOTOMY FOR TUMOUR EXCISION AT KOVAI MEDICAL CENTER AND HOSPITAL, COIMBATORE".** I found that the methodology and instruments are appropriate.

PLACE: Coimbatore

DATE: 29.04.2017

SIGNATURE & SEAL

APPENDIX –D

Letter issued by Ethical Committee)


**KMCH ETHICS COMMITTEE**

**KOVAI MEDICAL CENTER AND HOSPITAL LIMITED**

Post Box No. 3209, Avanashi Road, Coimbatore - 641 014. INDIA

✆ : (0422) 4323800, 4323619 Fax : (0422) 4270805

E-mail : ethics@kmchhospitals.com

EC Reg. No : ECR / 112 / Inst / TN / 2013


**Ref: EC/AP/532/03/2017**

**27.03.2017**

APPROVED

To

DR. J.K.B.C. PARTHIBAN, M.CH (NEURO)., FNS (FUJITA.JAPAN),

Consultant Neuro Surgeon,

Kovai Medical Center and Hospital,

Coimbatore – 14

Dear Sir,

Greetings to you.

I submit that one of our M.SC(N) final year students by name Ms.Anisha.C specializing in Medical Surgical Nursing in our College desires to conduct a study titled **"Eliciting Problems and Execution of Nursing Intervention among Patients Subjected to Craniotomy for Tumor Excision at KMCH, Coimbatore"**, as a part of her M.Sc (N) curriculum.

As she is in need of Medical Expert to complete the study, I request you to kindly guide the student.

27/3/17

Dr. P. R. Muthuswamy

Chairman, KMCH Ethics Committee

Dr. P. R. MUTHUSWAMY,
MA.,MEA. FDPM(IIM-A)Ph.D.,
Chairman
Ethics Committee
Kovai Medical Center and Hospital
Avanashi Road,
COIMBATORE-641 014

**Copy to:**

**Medical guide:**

**Dr.C.V.Kannaki Uthraraj** MD, DGO

Consultant

The Fertility Center

Kovai Medical Center and Hospital

**Research guide:**

**Prof.Dr.S.Madhavi** M.Sc(N).,Ph.D.,

Principal

KMCH college of Nursing

# APPENDIX - A

## I. DEMOGRAPIC VARIABLES

1. Sample no :

2. Age in years : a.□ 20-40 b.□ 41-60 c .□ 61-80

3. Sex : a.□ Male b.□ Female

4. BMI (kg/m) : a.□ 18.5-25 b.□ 25-30 c.□ Single

5. Marital status : a.□ Single b.□ Married c.□ Divorced d.□ Widow

6. GCS score on admission: a.□ 13-15 b.□ 9-12 c.□ 3-8

7. Co-morbidity:

i) Diabetes mellitus : a. □ yes, duration _____ b.□ no

ii) Hypertension : a. □ yes, duration _____ b.□ no

iii)End stage kidney disease : a. □ yes, duration _____ b.□ no

iv)Ischemic heart disease : a. □ yes, duration _____ b.□ no

v)Air way obstructive disease : a. □ yes, duration _____ b.□ no

8. Personal history of bad habits:

i) Smoking : a.□ yes, duration _____ b.□ no

ii) Alcoholism : a.□ yes, duration _____ b.□ no

iii) Tobacco chewing : a. □yes, duration _____ b.□ no

9. Date and time of admission : _____

10. Date and time of surgery : _____

11. Type of craniotomy : a.□ frontal b.□ temporal c.□ parietal

d.□ occipital e.□ mixed

**ASSESSMENT TOOL**

| S.NO | DATE & TIME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **I** | **Incerased ICP & seizure** | | | | | | | | | | | | |
| 1 | Vital Parameters | | | | | | | | | | | | |
| | a) Blood pressure | | | | | | | | | | | | |
| | b) MAP | | | | | | | | | | | | |
| | c) Pulse rate | | | | | | | | | | | | |
| | d) Rhythm | | | | | | | | | | | | |
| | e) Respiratory rate | | | | | | | | | | | | |
| 2 | GCS | | | | | | | | | | | | |
| | a) Eye opening | | | | | | | | | | | | |
| | b)Verbal response | | | | | | | | | | | | |
| | c)Motor response | | | | | | | | | | | | |
| 3 | Pupillary Assessment | | | | | | | | | | | | |
| | a) Size | | | | | | | | | | | | |
| | b) Shape | | | | | | | | | | | | |
| | c) Reaction | | | | | | | | | | | | |
| 4 | Presence Of Symptoms | | | | | | | | | | | | |
| | a) LOC | | | | | | | | | | | | |
| | b) Headache | | | | | | | | | | | | |
| | c) Seizure | | | | | | | | | | | | |
| | d) Nausea/vomiting | | | | | | | | | | | | |
| | e) Muscle weakness | | | | | | | | | | | | |
| | f) Papiledema | | | | | | | | | | | | |
| | g) Visual changes | | | | | | | | | | | | |

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| 5 | ABG analysis | | | | | | | | | | | | |
| | a) PH | | | | | | | | | | | | |
| | b) Pao2 | | | | | | | | | | | | |
| | c) Paco2 | | | | | | | | | | | | |
| | d) Hco3 | | | | | | | | | | | | |
| | e) Sao2 | | | | | | | | | | | | |
| **II** | **BREATHING PATTERN** | | | | | | | | | | | | |
| 1 | Chest assessment | | | | | | | | | | | | |
| | a) Inspection | | | | | | | | | | | | |
| | b) Palpation | | | | | | | | | | | | |
| | c) Percussion | | | | | | | | | | | | |
| | d) Auscultation | | | | | | | | | | | | |
| 2 | Ventilatiry data | | | | | | | | | | | | |
| | a) Mode | | | | | | | | | | | | |
| | b) Frequency | | | | | | | | | | | | |
| | c) TV | | | | | | | | | | | | |
| | d) PS | | | | | | | | | | | | |
| | e) PEEP | | | | | | | | | | | | |
| | f) PIP | | | | | | | | | | | | |
| | g) ETCO2 | | | | | | | | | | | | |
| | h) FiO2 | | | | | | | | | | | | |
| | i) Sedation | | | | | | | | | | | | |
| | j) Paralytic agent | | | | | | | | | | | | |
| 3 | Respiratory Effort | | | | | | | | | | | | |
| | a) Worsening of spontaneous respiration | | | | | | | | | | | | |
| | b) Tachypnea | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | c) Use of accessory respiratory muscle | | | | | | | | | | | | |
| | d) Use of thoraco abdominal paradox | | | | | | | | | | | | |
| **III** | **Pain** | | | | | | | | | | | | |
| | Pain assessment | | | | | | | | | | | | |
| | a) Location | | | | | | | | | | | | |
| | b) Intensity | | | | | | | | | | | | |
| | i. Mild | | | | | | | | | | | | |
| | ii.Moderate | | | | | | | | | | | | |
| | iii.Severe | | | | | | | | | | | | |
| | c) Quality of pain | | | | | | | | | | | | |
| | d) Total pain score | | | | | | | | | | | | |
| **IV** | **Hemorrhage, Hematoma, Hygroma & CSF Leakage** | | | | | | | | | | | | |
| | Surgical site assessment | | | | | | | | | | | | |
| | a) Bleeding | | | | | | | | | | | | |
| | b) Oozing | | | | | | | | | | | | |
| | c) Bulging | | | | | | | | | | | | |
| | d) CSF leakage | | | | | | | | | | | | |
| | e) Drainage | | | | | | | | | | | | |
| | f) Infection | | | | | | | | | | | | |
| **V** | **Hypothermia/Hyperthermia** | | | | | | | | | | | | |
| | a) Temperature | | | | | | | | | | | | |
| | b) Warm skin | | | | | | | | | | | | |
| | c) Shivering | | | | | | | | | | | | |
| | d) Peripheral pulse | | | | | | | | | | | | |

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| **VI** | **Cranial Nerve Dysfunction** | | | | | | | | | | | | |
| | a) Corneal reflex | | | | | | | | | | | | |
| | b) Gag reflex | | | | | | | | | | | | |
| | c) Cough reflex | | | | | | | | | | | | |
| | d) Swallow reflex | | | | | | | | | | | | |
| | e) Facial movement | | | | | | | | | | | | |
| | f) Tongue movement | | | | | | | | | | | | |
| **VII** | **Fluid&ElectrolyteImbalance** | | | | | | | | | | | | |
| | Hydration Status | | | | | | | | | | | | |
| | i)Intake | | | | | | | | | | | | |
| | a) IVF | | | | | | | | | | | | |
| | b) Blood | | | | | | | | | | | | |
| | c) RTF | | | | | | | | | | | | |
| | d) Oral | | | | | | | | | | | | |
| | e) Total | | | | | | | | | | | | |
| | ii)output | | | | | | | | | | | | |
| | a) RT aspiration | | | | | | | | | | | | |
| | b) Drain | | | | | | | | | | | | |
| | c) Urine | | | | | | | | | | | | |
| | d) ISL | | | | | | | | | | | | |
| | e) Total | | | | | | | | | | | | |
| **VIII** | **Meningitis/encephalitis** | | | | | | | | | | | | |
| | a) Chills | | | | | | | | | | | | |
| | b) Nuchal regidity | | | | | | | | | | | | |
| | c) +kernig’s sign | | | | | | | | | | | | |
| | d) +brudzinski’s sign | | | | | | | | | | | | |

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| **IX** | **Sensory&Motor Losses** | | | | | | | | | | | | |
| 1 | Muscle Power | | | | | | | | | | | | |
| | a) Normal power | | | | | | | | | | | | |
| | b) Minimal resistance | | | | | | | | | | | | |
| | c) Against gravity | | | | | | | | | | | | |
| | d) Minus gravity | | | | | | | | | | | | |
| | e) Flickering movements | | | | | | | | | | | | |
| | f) Flaccid | | | | | | | | | | | | |
| 2 | Deep Tendon Reflexes | | | | | | | | | | | | |
| | a) Biceps | | | | | | | | | | | | |
| | b) Triceps | | | | | | | | | | | | |
| | c) Brachial radials | | | | | | | | | | | | |
| | d) Quadriceps | | | | | | | | | | | | |
| | e) Calf muscle(achilles) | | | | | | | | | | | | |
| 3 | Superficial Reflexes | | | | | | | | | | | | |
| | a) Abdominal | | | | | | | | | | | | |
| | b) Babinski | | | | | | | | | | | | |
| 4 | Muscle bulk | | | | | | | | | | | | |
| | a) Muscle weakness | | | | | | | | | | | | |
| | b) Cachexia | | | | | | | | | | | | |
| 5 | Co-ordination | | | | | | | | | | | | |
| | a) Muscle tone | | | | | | | | | | | | |
| 6 | Abnormal movement | | | | | | | | | | | | |
| | b) Tremor | | | | | | | | | | | | |
| | c) Chorea | | | | | | | | | | | | |
| | d) Athetosis | | | | | | | | | | | | |
| | e) Dyatonia | | | | | | | | | | | | |
| | f) Hemiballism | | | | | | | | | | | | |
| | g) Fasciculation | | | | | | | | | | | | |

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| 7 | Station | | | | | | | | | | | | |
| | a) Stand with eye open | | | | | | | | | | | | |
| | b) Stand with eye close | | | | | | | | | | | | |
| | c) Stand both with eye open &close(erect posture) | | | | | | | | | | | | |
| 8 | Symmetry of gait | | | | | | | | | | | | |
| 9 | Sensory function | | | | | | | | | | | | |
| | a) Tactile(touch) | | | | | | | | | | | | |
| | b) Pain | | | | | | | | | | | | |
| | c) Temperature | | | | | | | | | | | | |
| | d) Vibration | | | | | | | | | | | | |
| | e) Position | | | | | | | | | | | | |
| **X** | **Cerebral /Cerebellar Dysfunction** | | | | | | | | | | | | |
| | a) Ataxic movement | | | | | | | | | | | | |
| | b) Loss of equilibrium | | | | | | | | | | | | |
| **XI** | **Diabetic Insipidus &SIADH** | | | | | | | | | | | | |
| | a) Excessive Urine output | | | | | | | | | | | | |
| | b) Excessive thirst | | | | | | | | | | | | |
| | c) prolonged capillary refilling | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **XII.** | **Lab Findings & Image** | | | | | | | | | | | | |
| | a) Hb /PCV | | | | | | | | | | | | |
| | b) CBC | | | | | | | | | | | | |
| | c) WBC | | | | | | | | | | | | |
| | d) Platelet | | | | | | | | | | | | |
| | e) PTT | | | | | | | | | | | | |
| | f) Na+ | | | | | | | | | | | | |
| | g) K+ | | | | | | | | | | | | |
| | h) RBS | | | | | | | | | | | | |
| | i) BUN | | | | | | | | | | | | |
| | j) Sr.osmolality | | | | | | | | | | | | |
| | k) Urine osmolality | | | | | | | | | | | | |
| | l) Urine specific gravity | | | | | | | | | | | | |
| | m) Others | | | | | | | | | | | | |

l)Urine specific gravity

## APPENDIX - E

## LIST OF EXPERT

1. **Prof. DR. S. Madhavi, M.Sc(N)., Ph.D.,**
   Principal
   KMCH College of Nursing,
   Coimbatore - 641014

2. **Prof .P. Kuzhanthaivel, M.Sc(N).,**
   Department Of Medical and Surgical Nursing,
   KMCH College of Nursing,
   Coimbatore - 641014

3. **Dr.J.K.B.C.Parthiban,M.Ch(Neuro).,**
   **FNS (Fujit. Japan)., spine fellow (India).,**
   Consultant Neuro, spine Surgeon
   Kovai Medical Center & Hospital
   Coimbatore - 641014

4. **Prof.Dr.K. Balasubramanian, M.Sc(N), Ph.D.,**
   Department Of Medical and Surgical Nursing,
   KMCH College of Nursing,
   Coimbatore - 641014

5. **Prof.P. Akila , M.Sc (N),Ph.D.,**
   Department Of Medical and Surgical Nursing,
   KMCH College of Nursing,
   Coimbatore - 641014

6. **Prof. P.Viji ,M.Sc(N), Ph.D.,**
   Department Of Medical and Surgical Nursing,
   KMCH College of Nursing,
   Coimbatore – 641014

# APPENDIX - F

# (NURSING MODULE)

# NURSING MODULE FOR THE CARE OF PATIENT UNDERWENT CRANIOTOMY

**NURSING INTERVENTION FORMAT**

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>➢ Altered mental status<br>➢ Behavioural changes<br>➢ Changes in motor response<br>➢ Changes in pupillary reactions<br>➢ Difficulty in swallowing<br>➢ Extremity weakness or paralysis<br>➢ Speech abnormalities | **Ineffective cerebral tissue perfusion** related to decreased cerebral blood flow as evidenced by<br>• Cerebral haemorrhage due to or loss of integrity of blood vessels<br>• Compression of cerebral blood vessels due to cerebral edema or blood accumulation<br>• Stretching of blood vessels during surgery | Maintains adequate cerebral tissue perfusion<br>• Absence of dizziness, visual disturbance, speech impairment<br>• Improved mental status<br>• Improved sensory and motor function | • Assess mental status periodically inorder to detect the increase in ICP<br>• Elevate the head end 30 to 45 degrees to promote venous outflow from brain thereby it reduces the pressure<br>• Minimize measures such as coughing, vomiting, straining, flexion of neck. This may lead to decrease in cerebral blood flow<br>• Administer anticonvulsants as per the order to reduce the risk for seizures.<br>• Control the environmental temperature and also prevent fever. This may increase the workload of brain leading to increase in ICP<br>• Provide rest periods between activities. Constant activity may lead to cumulative stimulant effect thereby increases the ICP.<br>• Monitor the intake and output of the patient. Retention causes autonomic nervous system stimulation.<br>• Administer oxygen / ventilate as per the patient's need. Hypercapnia leads to increased ICP. |

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>➢ Pain score4/10<br>➢ Facial expression shows sad | **Acute pain** related to surgical procedure as evidenced by Stretching of blood vessels during surgery | Minimize pain as evidenced by subjects feel comfortable | • Ascertain the location, nature and intensity of pain periodically<br>• Provide non pharmacological relief measures as appropriate for eye edema-eye patches,for immobility- frequent position change and back rubs.<br>• Inspecte surgical site for swelling, redness and oozing<br>• Slightly raise head of the bed ,reduce bright lights and room noise,loosen head dressing if constricted<br>• Administer analgesic like inj.perfalgan Igm,IV/BD as per |

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>➢ inability to move purposefully with physical environment<br>➢ inability to perform action as instructed<br>➢ limited ROM<br>➢ reluctance to attempt movement | **Impaired physical mobility** related to muscle weakness.<br>as evidenced by inability to move in bed or do activities | • performs physical activity independently or within limits of disease. | • Assisted patient for muscle exercises. It adds to gain sense of balance.<br>• Provided bed rails to prevent falls<br>• Enhanced passive or active ROM to increase venous return and to prevent stiffness<br>• Provided appropriate mattress to decrease pressure and to prevent complications<br>• Encouraged early ambulation to enhance self esteem and to improve independence<br>• Provided mobility devices ( trapeze, crutches, walkers)to enhance the level of activity<br>• Done position changing every 2 hourly as it optimizes the circulation to all tissues<br>• Kept limbs in functional and anatomical alignment to prevent complications such as contractures and foot drop |

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>➢ Altered mental status<br>➢ Change in usual response to stimuli<br>➢ Changes in motor response<br>➢ Extremity weakness or paralysis<br>➢ Speech abnormalities | **Disturbed sensory perception** related to<br><br>• Altered sensory reception, transmission and integration<br>• Excessive environmental stimuli<br>• Electrolyte imbalances<br>• Biochemical imbalance | Demonstrates understanding by<br>• written, verbal, or signed response<br>• relaxed body movement and expressions<br>• remains free from physical harms resulting from decreased balance, loss of vision , hearing or tactile sensation | • Identify the name and purpose when entering clients room because this helps client to feel secure<br>• Orient to time, place, person and surroundings. This helps client to remain oriented and provides sensory stimulation<br>• Keep all the harmful equipments and furnitures out of path. This provides safe environment to the patient<br>• Keep side rails up to prevent fall<br>• Converse with and touch patient frequently as per cultural norms . this may decrease social isolation<br>• Use warm and cold items cautiously. This may lead to injury |

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>➢ alert but unable to speak<br>➢ paralysis on right side<br>➢ difficulty in expressing her thoughts | **Impaired verbal communication** related to brain tumour and decrease in circulation as evidenced by<br>➢ facial expression, body language and difficulty in speaking | *Subject uses effective communication techniques | • Involve a familiar person when attempting to communicate to provide familiarity<br>• Listen carefully to the patient verbal and non verbal cues. As it enhances the self of being cared<br>• Using an individualized approach, establish an alternative method of communication such as writing, pointing on letters, word phrases, picture card, or simple drawings. This helps the patient to express better<br>• Spend time with the patient, allow time for responses. Allowing time for response gives a confidence for the patient to progress further<br>• Explain all the procedures before performing to prevent the sense of fear<br>• Teach the client and the family regarding the techniques to increase communication. This would enhance faster recovery. |

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>➢ Poor personal hygiene<br>➢ Inability to activities of daily living | **Self care deficit** related to<br>• cognitive impairment<br>• decreased strength and endurance<br>• impaired mobility<br>• musculoskeletal impairment<br>• neuromuscular impairment<br>• perceptual impairment as evidenced by<br>➢ inability to put on or off clothes<br>➢ inability to bathe and groom<br>➢ inability to feed and move | • Subject demonstrates lifestyle changes to meet self care needs<br>• Subject safely executes self care activities to utmost capability<br>• Subject identifies useful resources in optimizing the autonomy and independence in taking care of self | • Establish short term goal with the patient to reduce frustration<br>• Provide positive reinforcement for all activities attempted. This may helpin progress of the patient<br>• Provide necessary items for self care beside or at reach of the patient to decrease strain<br>• Meet all the self care needs when the patient is unable. This helps in enhancing self esteem<br>• Provide privacy during all the self care activities as it is fundamental for all human beings<br>• establish regular activities and provide rest periods to prevent fatigue<br>• Educate the family / caregiver the techniques in meeting self care needs of the patient |

| Nursing assessment | Nursing diagnosis | Goal | Interventions with rationale |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>Has loss of sensation in the right side<br>Unable to move the upper and lower extremity<br>Has slurring of speech<br>Has deviation of the mouth | **Unilateral neglect** related to Ischemia of portions of brain<br>as evidenced by<br>• hemiparesis<br>• hemiplegia<br>• paraplegia | ➢ subjects experiences a gradual adaptation by awareness to stimuli on affected side of the body | • Implement all the measures to improve cerebral tissue perfusion inorder to decrease cerebral ischemia<br>• Position the affected extremities in normal alignment to prevent contractures<br>• Provide active and passive exercises to improve circulation<br>• Touch and move affected extremities routinely so it provides sensory stimulation and can help patient experience normal movement patterns<br>• Encourage the patient top handle the affected extremities when bathing, dressing so that it provides a feeling of self awareness<br>• Place familiar items on the affected side to enhance movements |

| **Nursing assessment** | **Nursing diagnosis** | **Goal** | **Interventions with rationale** |
|---|---|---|---|
| Subjective data:<br><br>Objective data:<br>Shows facial grimaces<br>Expresses feeling of helplessness and strain | **Caregiver role strain**<br>related to<br>• difficulty in performing care to patient<br>• worries related to own health<br>• problems in coping with patient behaviour<br>as evidenced by<br>➢ illness severity of care receiver<br>➢ multiple competing roles of care giver<br>➢ social isolation of family<br>➢ limited availability of resources | *caregiver demonstrates competence and confidence in performing care<br><br>*caregiver expresses satisfaction with the role<br><br>* she expresses positive feelings about the care recipient<br><br>*She uses strengths and resources to withstand stress of caregiving | • Encourage caregiver to identify available family and friends who can assist with care. This will reduce the strain on one person<br>• Suggest the caregiver to use all available resources .<br>• Encourage the caregiver to set aside time for self in order to provide relaxation for self<br>• Acknowledge the role of caregiver that she is doing a valuable job so that it provides encouragement<br>• Encourage care recipient to thank the caregiver. It may reduce the feeling of strain<br>• Provide time for caregiver to express the problems, concerns and feelings. This may provide emotional support to the caregiver<br>• Provide information about disease process and management strategies to enhance the knowledge and decrease the ignorance level of the caregivers<br>• Provide family counselling if family is amenable. This enhances coping. |